

THE RAILWAY GAZETTE

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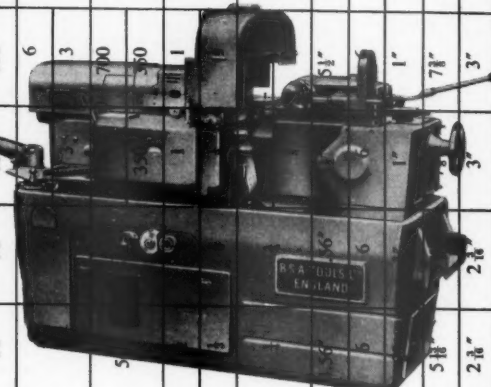


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The Season's Greetings

MACHINE	48	68	18L	25L	68L	88L	98L	138L	168L	METRIC 24	METRIC 36	METRIC 52
Workspindle capacity	round square hexagon	3" 3.53" 4.37"	3" 3" 3"	18 mm. 13 mm. 16 mm.	25 mm. 18 mm. 22 mm.	3" .0530" 0.650"	1" .0708" 0.866"	1 1/2" 1 1/2" 1 1/2"	2" 1.414" 1.730"	24 mm. 17 mm. 20 mm.	36 mm. 25.4 mm. 30 mm.	52 mm. 35 mm. 45 mm.
Max feed in one movement	long stroke short stroke	2" 1"	3" 2"	75 mm. 50 mm.	3" 2"	3"	4" 2 1/2"	4" 2 1/2"	4" 2 1/2"	90 mm. 80 mm.	90 mm. 80 mm.	90 mm. 80 mm.
Stroke of turret cam (standard)		1 1/2"	2 1/2"	50 mm.	2 1/2"	2 1/2"	3"	3"	3"	18 mm.	18 mm.	18 mm.
Max. diameter using diehead		3 1/2" fine	3 1/2" fine	16 mm.	3 1/2" fine	3 1/2" fine	1"	1 1/2"	1 1/2"	38—	24—	30—
Range of spindle speeds		166— 7,370	53— 4,480	40— 4,500	53— 4,480	53— 4,480	70—3,490 24—3,590	78—2,300 25—2,540	69— 1,520	3,000 1,900 1,500	1,900 1,500	1,500
Number of high speeds	4 speed 2 speed	18	10	14 14	10 10	10 10	22 13	19 12	17	10 10	10 10	8
Low speeds available for each high speed		2	10	11—13 9—10	11—13 9—10	7—9 6—7	3—5 8—9	3—5 7—8	3—5	4—5 4—5	4—5 4—5	4—5
Number of cycle times	long stroke short stroke	46 3	65 2	96 2	96 2	96 2	106 3	106 3	106	46 8	46 8	46 8
Cycle time range (secs)	fastest slowest	75 562	180 562	561 561	561 561	561 561	35 35	35 35	700	360 360	360 360	360
Actual time to feedstock (secs)	long stroke short stroke	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1	1 1	1 1	1
Time to change speed (secs)	long stroke short stroke	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1	1 1	1 1	1
Diameter of turret		3 1/2"	4 1/2"	116 mm.	116 mm.	116 mm.	116 mm.	5 1/2"	5 1/2"	140 mm.	140 mm.	140 mm.
Number of turret holes		6	6	6	6	6	1"	1"	6	6	6	6
Diameter of turret holes		1"	1"	19.05 mm.	19.05 mm.	19.05 mm.	1"	1"	1"	25.4 mm.	25.4 mm.	25.4 mm.
Distance chuck to turret	max. min.	3 1/2" 1 1/2"	5 1/2" 2 1/2"	120 mm. 49 mm.	120 mm. 49 mm.	5 1/2" 2 1/2"	7 1/2" 3"	7 1/2" 3"	7 1/2"	180 mm. 64 mm.	180 mm. 64 mm.	180 mm. 64 mm.
Turret slide adjustment		1 1/2"	2 1/2"	21 mm.	21 mm.	1 1/2"	1 1/2"	1 1/2"	1 1/2"	38.1 mm.	38.1 mm.	38.1 mm.
Spindle centre to top of cross slide		1"	1 1/2"	30 mm.	30 mm.	1 1/2"	1 1/2"	1 1/2"	1 1/2"	36 mm.	36 mm.	36 mm.
Movement of cross slide		1"	1 1/2"	32 mm.	32 mm.	1 1/2"	1 1/2"	1 1/2"	1 1/2"	40 mm.	40 mm.	40 mm.



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Increased Borrowing Powers for B.T.C.

THE borrowing powers of the British Transport Commission both for capital expenditure and to meet its deficit are much enlarged by the Transport (Borrowing Powers) Bill, presented to the House of Commons earlier this week. The amount which the Commission may borrow for capital investment is increased from £600 million to £1,200 million, and the amount authorised to be borrowed under the Transport (Railway Finances) Act of 1957 to meet deficits is raised from £250 million to £400 million. It was announced last month that the deficit for the current year, mainly on the operation of British Railways, was expected to be £85 million, or £20 million more than for 1957. Sir Brian Robertson, Chairman of the B.T.C., has warned the Minister of Transport & Civil Aviation, Mr. Harold Watkinson, that the present borrowing powers may be exhausted in 1959. In stating the Government intention to advance the necessary funds under the Act of 1957, Mr. Watkinson has emphasised that the Commission should press forward with plans for achieving economies in operation, and that the Government cannot envisage "an

indefinite extension of a time when the Commission will break even." In proposing the revised limit of £1,200 million he is doubtless considering the rate of expenditure on railway modernisation, which will necessitate borrowing a further £600 million in the next three or four years. Modernisation is one of several heads under which large sums must be spent. Perhaps half the money provided for implementation of the modernisation plan would have to be spent in any case on essential renewals and replacements. When the Transport (Railway Finances) Act was passed in 1957 there were misgivings as to the loan to meet the deficit. It was felt that without the exercise of strict financial discipline by the Commission and strenuous efforts to achieve financial equilibrium and eventually to repay the loan, the latter might become the thin end of the wedge of subsidy, with its attendant evil of the lack of enterprise and of any spur to efficiency. The loan is not, and will never be, a subsidy if the Commission succeeds in achieving financial equilibrium. At the moment, when goods traffic is badly affected by the recession in industry, the railways are handicapped in their very considerable efforts to improve their financial position.

Management in Modern Industry

A COMPARISON of individual with team management was discussed last week by Sir John Elliot, Chairman of the London Transport Executive, in a paper on the rôle of the top executive in a large organisation read to the British Institute of Management National Conference at Brighton. With individual management, the lines of responsibility are quite clear. The obvious disadvantage is that a poor chief executive may make too many wrong decisions. The team management system, on the other hand, has the advantage of a pool of brains and experience available at the top, and the heavier responsibilities can be shared, though there is the risk of timidity. Sir John Elliot, who has had long experience of both systems, thinks on balance that in a large business team management is better suited to the highly specialised world of today. In London Transport there is team management at the top, with individual responsibility at lower levels. He refers to the partnership of Lord Ashfield and Frank Pick in London Transport before the war of 1939-45. The L.T.E. system of today, he points out, is the product of Lord Ashfield's vision, imagination, and deep knowledge of urban transport requirements.

Improvements in East Africa

THE draft East African Railways & Harbours budget for 1959, and the general policy for construction of new railway lines were the main items considered recently by the East African Transport Advisory Council and the Railways & Harbours Committees. Expenditure of some £472,000 was recommended on improvements and replacement of railway equipment. The building and equipping of a diesel locomotive depot for the maintenance and repair of main-line diesel locomotives was notable among the new works discussed. The facilities will be adequate for a fleet of up to 20 locomotives. Agreement was also given to the expenditure of some £74,000 on the first part of the final phase of the scheme for increasing the capacity of Nairobi mechanical workshops to maintain the larger fleet of locomotives and rolling stock now in service. A number of miscellaneous works designed to improve the permanent way were agreed. They included the renewal of ballast on various sections in Kenya and Uganda, re-laying of sidings in the Dar es Salaam industrial area, and the second stage of the work on laying long welded rails. Apart from the proposed branch line from Kilosa on the Tanganyika Central Line to Mikumi discussed earlier this year little new construction seems to be envisaged.

Calcutta Electrification Inaugurated

THE recent inauguration of electric traction on the Calcutta (Howrah)-Burdwan main line of the Eastern Railway of India marks the completion of conversion on

the 3,000-V. d.c. system. All future electrification work will be carried out at 25 kV., 50 cycles a.c.; installation is already in progress at this voltage on the broad-gauge suburban line between Calcutta (Sealdah) and Ranaghat. The decision to electrify lines of the former East Indian (now Eastern) Railway in the Calcutta area at 3,000 V. d.c. was made early in 1954, but some three years later after a start had been made on the 3,000-V. system the high-voltage a.c. system was adopted as standard for future work. It is unlikely that the section now completed will be converted for a.c. operation, so eventually Burdwan will become a junction between the 3,000-V. d.c. and 25-kV. a.c. systems. This will limit the effective use of the d.c. motive power, but it is providing vastly improved services which had become imperative with industrial expansion in the Calcutta area.

Overseas Railway Traffics

RAILWAY receipts of South African Railways & Harbours in the week ended August 30, were £3,026,645 compared with £2,784,694 in the corresponding week of 1957. This tendency to rise above the 1957 figures continued in the following nine weeks, and at October 25, aggregate receipts from April 1, were £86,427,236 compared with £83,258,372 for the same period of 1957. The general improvement in receipts is reflected in the weekly average which, at October 25, was £106,198 better than that for 1957. Harbour receipts have, in the main, remained below last year's figures, but Airways receipts have maintained a steady increase with aggregate receipts at October 25 some £1,300,000 up on the corresponding figure for 1957. Paraguay Central Railway receipts have continued to improve compared with the poor returns in the early part of the financial year. Aggregate receipts at September 26, showed a decrease of G1,292,557 compared with the same period of 1957, but at November 14, eight weeks later, the difference was only G386,382. Figures received from the Midland Railway Company of Australia Limited show that estimated road and railway receipts for August were £A64,793 (against £A73,532 for August, 1957).

New Attempt on London Peak-Hour Problem

ANOTHER attack, on a broader front than before, is being made on the London peak-hour travel problem. The Minister of Transport & Civil Aviation, Mr. Harold Watkinson, announced in Parliament last week that he had set up a new body, the London Travel Committee. This has wider powers than the Committee for Staggering Working Hours, whose two-year term has expired. The names of members are given in our personal columns. The remit includes consideration and setting in train where practicable of measures, including staggering of working hours, to relieve congestion on roads into and out of Central London and on London Transport Executive road and rail and British Railways services; and recommendations to the Minister and to the British Transport Commission and L.T.E. of measures which the committee thinks desirable but cannot itself initiate. The Chairman is Mr. Alex Samuels, now Chairman of the London & Home Counties Traffic Advisory Committee. Recognition of the part played by nationalised transport is shown in inclusion in the committee of Mr. B. H. Harbour, the Member of L.T.E. responsible for service and fares; Mr. D. McKenna, Assistant General Manager of British Railways, Southern Region; and Mr. S. F. Green, General Secretary of the National Union of Railwaymen.

India Adopts the Metric System

HARD on the adoption of the decimal coinage in 1957, which involved much readjustment by the railways, the Republic of India is now introducing the metric system of weights and measures. It has been used since October 1 in trade generally in selected areas, concomitantly with the existing measurement systems. Booking

of goods and parcels by the railways is provisionally to start from April 1, 1960. One problem is re-calibration of all station weighing machines and weighbridges which still have a useful life, to show both systems of weights, and training of the staff. Re-calibration is being carried out by phases in railway workshops and by private manufacturers in India. The civil engineers now have to fix new kilometre posts and change the number plates of telegraph posts to correspond, apart from much work on plans and drawing at headquarters. The immense task of re-designing standardised parts, assemblies, and other equipment in the mechanical department has involved the setting up by the Railway Board of special "cells" for this work. Specifications for articles supplied from Britain and other countries which do not use the metric system, will shortly show both metric and English linear measurements. Ample time is being given before the metric system is used exclusively.

Stopping and Re-starting

THE cost of stopping a steam passenger train of four vehicles at a wayside station in Suffolk, in the Eastern Region of British Railways, was stated recently to be 1s. 4d., mainly for brake wear. The matter arose when the stop, at which only one passenger entrained, was abolished on grounds of cost. It has since been restored in view of the hardship caused by lack of other public transport. The comparable costs of stopping a two-car or single diesel railcar unit or a railbus would be less. It would be interesting to know the cost of the many stops of a pick-up goods train, which must add greatly to the expense of such services, useful though they may be as feeders. Stopping a heavy train, even although no high speed may be involved, is expensive, as several managements have found with conditional stops. This may account for the disappearance of such stops from the timetables of several railways overseas, with no signs of reappearance after introduction of diesel traction. With a railcar or railbus it would often be mistaken policy to allow the relatively low cost of stopping and re-starting to risk goodwill by causing elimination of halts.

Eastern Region Diesel Maintenance

A RECENT visit to the Stratford diesel maintenance depot on the Great Eastern Line of British Railways, Eastern Region, enabled us to inspect in detail the staffing arrangements and the working routine which serve to achieve maximum user of motive power. A description of the depot and the methods followed there is given on pages 686-688. The clean, well-lighted premises are essential for efficient handling of the costly machinery and instruments used. That the work is well done is shown by the quick turnrounds of railcars and locomotives. Although only hand tools are mainly used, mechanisation has been applied to operations such as changing engine and transmission oil and coolant. This saves much time besides reducing the cleaning up required. The thermostatically controlled heating system is effective and economical in operation, as it employs used lubricants for fuel. Five British diesel engine manufacturers have arranged familiarisation courses to which fitters from Stratford Depot are sent to acquire proficiency, by what is probably the quickest method, in all types of diesel engine maintenance.

Success of N.Z.G.R. New Refrigerated Vans

FOR the past year, to speed up exports of frozen meat, New Zealand Government Railways workshops throughout the country have been concentrating on assembling the "Vs" insulated refrigerator vans. These are being used mainly to carry chilled meat from freezing plants to wharves. Two years ago, after a discussion with the Chairman of the Meat Producers' Board, Mr. J. D. Ormond, the then Minister of Railways, Mr. J. K. McAlpine, considered a new type of insulated wagon to be urgently needed and tenders for the "Vs" wagons

were called immediately. Eventually 100 bodies for 25-ton capacity vans were ordered from the Commonwealth Engineering Co. Ltd., in Australia, and 100 from the Metropolitan-Cammell Carriage & Wagon Co. Ltd. in Britain. The British product was described in our October 3 issue. The Australian-built bodies are now in service, and the British-built in course of delivery. The roller bearings were cast in N.Z.G.R. workshops. The total loaded weight is nearly 46 tons. The users report that the wagons are highly efficient in keeping meat cool even in the hottest weather, and that the steps taken by the designers and builders to ensure hygiene have been successful.

Passenger Traffic Increase in Western Australia

DESPITE the growth of private road transport in Western Australia, and the relatively low speeds attained on the 3-ft. 6-in. gauge lines of the Western Australian Government Railways, passenger journeys increased during the year ended June 30, 1958. They totalled 14,384,000, a rise of 808,000 compared with the preceding 12 months. The rise was wholly in the Perth suburban area, where the present frequent services, free car parking at stations, and other steps to attract traffic have induced more people to travel by train. In the country districts there was a small decline in passenger traffic caused by the increase in road vehicles. Diesel traction has played an important part in improving W.A.G.R. passenger services. Circumstances in the Perth suburban area do not favour electrification. What has been achieved there shows what can be done without electrification and on a comparatively narrow gauge, in a community where a high standard of living pre-disposes to private motoring. Managements of railways similarly placed might well study what is being done in and around Perth.

Re-sloped Cuttings to Prevent Snow-drifts

AT this time of year railway engineers in northern latitudes are preparing in various ways to meet the threat of drifting snow in cuttings. In countries such as Scotland, fences of continuous up-ended old sleepers are most frequently erected to prevent the filling up of cuttings. Snow sheds are also used in some places, but, like the snow fences, have to be maintained. In the U.S.A. the technique seems to be not to obstruct blown snow but to encourage it to blow unimpeded across cuttings by flattening their side slopes. The new slopes vary to some extent with the width of the right of way, but 4 to 1 is a common inclination. On the Chicago, Rock Island & Pacific Railroad, for instance, the Omaha-Denver main line, traversing open rolling country, has recently been subjected to continuous cutting-resloping, off-track earth-moving plant proceeding from cut to cut. Cuts up to 40 ft. deep—widened 35 ft. on each side—have been re-sloped by a three-man crew operating two caterpillar "D7" tractors with Cat No. 70 scrapers and a model "C" Tournatractor with "LP" scraper. The spoil is carried to low spots along the cess. The resloped cuttings permit of a clean "blow-through" without drifts.

Developments in Freight Handling

THE informative paper on research and development in the handling of freight traffic given by Mr. A. E. Flaxman, Commercial Officer, British Railways, Western Region, to the Railway Students' Association at the London School of Economics last week, should be widely studied. In a small compass it describes the new devices, already installed or the subject of experiment in Britain, for handling traffic, more particularly in eliminating the disadvantages of double handling in consignments by road and rail. Movement in goods sheds is facilitated not only by the better-known slat and drag-line conveyors and by power trucks, but also, at the Western Region depot at Small Heath, Birmingham, by the new chain conveyor moving at 40 ft. a min. At Newton Abbot, in the same Region, the "driverless truck," electrically controlled over a pre-determined circuit, and hauling up to five trailers with a total

load of 2½ tons, is to be used experimentally. The lecturer's remarks on palletisation include palletised movement of refractory bricks for the iron and steel industry. In his observations on yard operations he refers to several developments shown at the recent freight transport exhibition at Battersea. In general, British Railways have progressed further than any other administration in developing equipment to improve their goods services, but they are active in studying what is being done by railways overseas.

A Dangerous Occupation Crossing

THE fatal accident at Funthams Lane occupation crossing, near Whittlesea, on the March-Peterborough line of British Railways, Eastern Region, on April 27, 1958, was a reminder of the difficulties arising at such locations. Road traffic often has increased to such an extent as to make them, virtually, public crossings and there is little hope of persuading users to carry out their obligations, especially that of closing gates behind them. The driver of a motor-car, who with his two passengers lost his life on this occasion, was not familiar with the district. The gates had been left open and probably he did not know there was a crossing there until the last moment. Reliable electrical warning indicators existed, but often went unheeded by regular road users, not altogether without excuse. Colonel D. McMullen, whose report on the case we summarise in this issue, felt that only automatic half-barriers could meet the special conditions obtaining at reasonable cost, and, as they have not yet been legalised for occupation crossings, recommends the British Transport Commission to seek powers to install them and, if obtained, to do so as soon as possible here.

Better Railway Service to Gain Traffic

A CLOSELY reasoned case for modernising British Railways was presented last Friday by Sir Reginald Wilson, Member of the British Transport Commission and Chairman of the Eastern Area Board, at the British Institute of Management conference in Brighton. The improvements resulting from implementation of the modernisation plan, he maintained, could reduce freight transport costs by at least one-third, and even by one-half. He supported this claim by quoting figures of the economies to be realised from replacement of steam by diesel traction on a large enough scale, and from operation of fully-braked goods trains. They are, we believe, conclusive figures, though they need further discussion than was possible in the time at his disposal. As a special form of roadway, a railway, he rightly points out, allows of a great deal of mechanisation, which affords very high productivity with low costs. In reasonable conditions on British Railways, two men, the driver of the diesel or electric locomotive and the guard, can move in one train 25,000 ton-miles of heavy freight or 40,000 passenger-miles in one hour. No other technique, as Sir Reginald Wilson states, can approach the railway for output in land transport.

The modernisation plan, he emphasised, was a policy of replacement and rationalisation, not of expansion, like the Government road policy. Its implementation was accompanied by some reduction of rail facilities. He pointed out that the plan had been necessitated by under-provision for depreciation in the past and the heavy fall in the money value of such provisions as were made. The range of railway costs, Sir Reginald Wilson showed, could be very wide. The railways had allowed themselves in the last 20 years to be elbowed out of the most suitable traffics into the less suitable, and therefore out of their low cost ranges into their high cost ranges. This would have to be reversed by sound price policies and a firmer commercial attitude. The public relations of the railways and allied factors, he maintained, were also vital in promoting good understanding with railway users.

He explained his belief that the managers of large con-

cerns must expect the railways to become much more selective in their treatment of customers. The customer would be treated best who treated the railways best. In particular, anyone who was prepared to come to a proper service agreement to cover predicted traffic flows, preferably two-way, on a properly organised basis for a sufficient period would find that very much better rates could be offered to him. The whole objective, he urged, must be to work much more closely with each customer and to study his transport problems with him. Freedom in dealing with customers is healthy, but the railways are a public service. Any step, however just and fair it may be in fact, as are those suggested by Sir Reginald Wilson, which might even appear to tend towards favouring any customer or class of customers, could well result in an outcry. This factor must always be borne in mind.

As to the attitude of the public to the railways, lapses in service, however few, will always receive publicity. What Sir Reginald Wilson explained at Brighton, as to the ill effects of hostile propaganda, uninformed criticism, and sheer ignorance, was no doubt true. But there is little that can be done except to provide railway services so good as to silence criticism or doubts as to the wisdom of investment in modernisation. There are doubtless some who for political or other reasons wish the railways to fail. Most traders and manufacturers in this country wish for efficient transport. They have no particular bias for or against British Railways though they may be deterred by reports of inefficiency or discouraged by a lapse in service, more particularly in their earlier dealings with railways. In the long run all except a minority of irreconcilables will use the railways when they find the service gives them what they require at the charges they are prepared to pay.

The Value of the Consulting Engineer

THE contribution which can be made to the national economy by the consulting engineer was outlined by the President of the International Federation of Consulting Engineers, Mr. Julian S. Tritton, in an informative paper read to the Royal Society of Arts, in London, on December 3. A consulting engineer was defined as a person, qualified in engineering, who devotes himself to advising the public on engineering matters, or designing and supervising the construction of engineering works. Having professional status his advice must be independent of commercial or manufacturing interests which may influence his judgment.

Members of the Association of Consulting Engineers are all members of one or more of the three parent institutions, Civil, Mechanical, and Electrical. Mr. Tritton explained that for two main reasons their work was not better known; there are only some 500 members of the Association and these, by professional etiquette, are not permitted to advertise.

It is sometimes asked "Why employ a consulting engineer?" The normal loading of the chief engineer of an administration is sometimes exceeded. The alternative to taking on temporary staff is to call in a consulting engineer, who is a specialist, experienced in that particular class of work and who has technical staff available. It sometimes happens that a chief engineer, faced with a major project such as building a bridge, is not familiar with the rôle of the consulting engineer, and the valuable part he can play in reducing the burden in such a case. The chief engineer who acts alone will select, from the advertisements of a technical journal, two or three firms of international repute and invite their proposals. News will soon spread, and he is then beset on all sides with a number of preliminary designs, all different, and with estimates which vary by two or three hundred per cent. The chief engineer has the difficult task of comparing the offers and making a selection which may be open to challenge.

It was explained that time and effort, which mean

money, can be saved in such cases by calling in a consulting engineer to advise on the project. Having ascertained the client's exact requirements, he will interpret these in his designs, specifications and conditions of contract, so that tenderers may know what is required and the risks to be covered. The tenders are then on a fair and comparable basis, and the client is assured of the best value for his money.

Expenditure of public funds is a grave responsibility. Application for Government sanction for funds is more likely to receive approval if the plan has been examined and approved by an independent consulting engineer.

Consulting engineers are frequently told that they are the spearhead of the export drive of this country. This spearhead is pointed at administrations which contemplate some major engineering work. It is usually assumed that a favourable project report, covering a British design, incorporating British materials, standards and components will give bias to the order being placed with a British company. The author gave his assurance that there will be no lack of effort by British consulting engineers to be the first in the field with the project report, but it is essential that the report must be fair and unprejudiced. It must not be written as sales propaganda. Mr. Tritton stressed that consulting engineers may not answer advertisements for professional services, or knowingly compete with one another in the matter of fees. Their code of practice does not permit them to solicit references or seek business. This professional etiquette is sometimes criticised on the grounds that it is detrimental to the export effort. Means of overcoming these difficulties are at present the subject of discussion.

Mr. Tritton's résumé of how the consulting engineer's services best can be made use of to sharpen this country's attack on the export markets of the world will be studied with interest both at home and abroad. It is clear that leaders of industry may rely on the active support of consulting engineers for technical advice on their project reports and designs and also in drawing up suitable conditions of contract which make tenders fair and comparable.

First Main Line A.C. Electrification in Britain

THE initial run with a passenger train, last week, of the first a.c. electric locomotive in the United Kingdom marked the completion of electrification of the first portion of British Railways, London Midland Region, main line to be converted at 25 kV., 50 cycles. This is the Styal line, 9½ route-miles between Wilmslow and Slade Lane Junction via Styal on the Crewe-Manchester line. One nine-mile 50-cycle line already exists in Britain, the length converted mainly for experimental purposes between Lancaster, Morecambe, and Heysham. This is electrified at 6.6 kV., which voltage is to be used in places where clearances are limited on all other lines of British Railways to be electrified on the a.c. system. Locomotives and multiple-unit trains will be capable of working at this voltage where required and at 25 kV. on open stretches of line.

The Lancaster-Morecambe-Heysham line has been used for tests, more particularly of rectifiers. Until electrification of the Crewe-Manchester is completed in 1960, the running of the electric locomotive over the Styal line will be for training purposes and overhead equipment testing only. The electric locomotive, originally a Co-Co gas turbine and converted by the builders, the Metropolitan-Vickers Electrical Co. Ltd., has an AIA-AIA wheel arrangement and a continuous rating of 2,500 h.p. Its weight in working order is 105 tons, which compares with 80 tons for the type "A" 3,300-h.p. Bo-Bo electric locomotives now being built at British Railways works and also by several private builders for the Crewe-Manchester service.

This test locomotive has been re-modelled and re-equipped to conform as nearly as possible with the design of the new a.c. locomotives, though only one panto-

graph is fitted, whereas future locomotives will have two. The principal components are identical with those being incorporated in the new units. Probably the most interesting of these is the main transformer, which includes a voltage change-over switch. This alters the supply tapping on the auto transformer to correspond with the main incoming voltage at either 25 kV. or 6.25 kV. The change-over switch is automatically controlled by an automatic power control system (A.P.C.) which consists essentially of a track magnet, a receiver on the bogie of the locomotive, and a line voltage transformer which feeds a number of voltage selecting relays. The auto transformer has 38 taps to feed a step-down transformer, which in turn supplies the main rectifiers. Both transformers are in one tank. Operational experience will not be gained with the A.P.C. system at the outset because the whole of the Styal line operates at 25 kV.

Crewe-Manchester suburban services will be operated by multiple-unit trains. Because the stock will not be delivered until late in 1959, four trains being built for the London, Tilbury & Southend line, Eastern Region, are being loaned to the London Midland Region for the training of motormen. The trains being built at British Railways works at York and Doncaster will be identical to this stock, apart from the electrical equipment. These units are assembled into four-car sets with a total tare weight of 150 tons. They are of both open and compartment stock and each unit has seating for 19 first and 344 second class passengers. The units can be coupled to make either four-, eight-, or 12-car trains, and can be controlled from any cab by master controllers interconnected by 36-way control jumpers which connect the coaches and units together.

Electrification in general is now proceeding rapidly, and the fact that existing services are still running normally is greatly to the credit of British Railways and the contractors concerned. By 1960, electric services will be introduced between Crewe and Manchester, and by 1963 they will have been extended to Birmingham and Liverpool. By 1968 it should be possible to operate through electric services between Euston and Manchester and Liverpool via Birmingham.

Adhesives in Rail-Joint Assemblies

SEVERAL railways in North America are now testing the use of adhesives in rigidifying rail-joints and so eliminating rail-end batter and reducing maintenance. A two-part resin plastic adhesive known as Bondarc glues the fishplates to the rails. Preliminary tests showed that joints so rendered inflexible ensured a smooth-running continuous rail likely to add 10 to 15 years to the life of existing track. The glued joints also reduced maintenance by eliminating the expansion and contraction in ordinary joints.

Laboratory research has been carried out at the Armstrong Research & Development Center, at the Bethlehem Steel Corporation laboratories, and at Lehigh University for over a year, upon 132-lb. rails with six-bolt fishplates. A 300,000-lb. resistance to slipping is reported with Bondarc applied to clean, sand-blasted fishing surfaces, and by butt-glueing the rail-ends additionally a further 40,000 lb. is obtained. As no fishbolt tension in excess of 20,000 lb. was needed it was not found necessary to use high-strength bolts. Extensive Amsler alternating-load tests showed that vibration under traffic was unlikely to cause failure in the glue.

A mile of glued track was also laid on the Delaware & Hudson Railroad; 115-lb. rails with head-free fishplates were used. This mile-length was laid as a part of that railway's long-welded-rail relaying programme and had welded track on both sides of it for comparison. So far only 3 per cent failures of the joints to remain rigid have been reported, and these failures are believed to be due to lack of experience in the method of application; they are, of course, harmless, as the joints remain mechanically efficient.

There remained the question how the adhesive would

behave in sub-Arctic conditions. To ascertain the effects of a combination of the lowest temperatures and heavy traffic on glued joints, the Quebec, North Shore & Labrador administration undertook to convert two miles of its main line to continuous glued track. This line carries 2,000,000 gross tons of traffic a month in 20 trains a day, and is subjected to temperatures as low as -70° F. Two methods of application were tried: (1) in the first mile the gaps in the rails then in service were closed and the fishplates removed so that they could be glued; and (2) in the second mile new rails and fishplates were laid. The new rails were glued 20 at a time to form continuous lengths before laying in a manner similar to that used for long welded rails.

Great care was taken in the sand-blasting with a fine dust-free abrasive leaving no residue, fine sand having proved unsatisfactory. In the first mile a trolley-mounted air-compressor was used to supply the blast. After sand-blasting the fishplates were balanced on the table of the rail above the joint-gap so that the whole assembly could be pre-heated in a special propane-fired oven fitting saddle-wise over it and suspended from another hand-push trolley. On the deck of this trolley the two-part adhesive was mixed, the parts being a base material and a hardener. The pre-heating tends to reduce stressing the adhesive in the interval between the periods of "jell" and "cure." After trying spraying, it was found that the best method of applying the glue to the fishplates was on the finger of a man's hand in a rubber glove; it could be applied quickly in this manner, as the heated fishplates gave the glue a consistency of butter. Though these tests have been carried out under traffic for over a year, and have proved satisfactory, it is realised that the whole method so far used is exploratory and likely to be improved in due course.

Freight Traffic on U.S.A. Railroads

(By a correspondent)

THERE has been a setback to railway freight traffic in America since the later months of 1957, differing only in intensity from the experience of British Railways. In 36 weeks to September 7, our railways forwarded 2,633,000 fewer loaded wagons than in 1957, a decrease of 12 per cent. Merchandise loadings were 12 per cent lower, while minerals filled 20 per cent fewer wagons and coal class loads were down 9 per cent. In turn wagon loadings in 1957 were 776,000, or 2.5 per cent, below 1956; coal accounted for most of the decrease.

The latest report from the Association of American Railroads stated that in 41 weeks to October 11, wagon loadings were 5,110,000, or 17 per cent, fewer than in 1957 and 6,303,150, or 21 per cent, below 1956. Bountiful harvests lifted this year's grain loadings by 6 per cent to 2,245,000, averaging about 54 short tons a wagon. More bumper crops were expected to be harvested later in the year. Forwardings of all other commodities diminished by large percentages, varying from 10 in livestock and forest products to 21 in coal and 42 per cent in ore.

The coal output has a great effect on the U.S.A. economy. In 40 weeks to October 4 only 293 million tons were produced against 377 million tons in 1957, a decrease of 22 per cent. In the first nine months of 1958, coal exported overseas totalled 30.7 million tons, a decrease of more than a third from last year's shipments of 46.8 million tons. Over the same period coal tonnage worked to Lake Erie ports also declined by nearly 10 million tons, or 27 per cent. Inland consumption of coal has run at a rate of 14 per cent below last year.

In 40 weeks the movement of iron ore from Lake Superior ports fell from 69.5 million tons to 39.8, or by 42 per cent. To September 1 the rail movement of imported ore from ocean ports shrank from 13.6 to 9.8 million tons. The latest news is that steel plants are working at only three quarters of their capacity. Apart from these catastrophic losses of heavy traffics, forward-

ings of merchandise and "smalls" were down 16 per cent.

In September the railroads had a daily surplus of 30,000 wagons and their fleet of 1,592,000 serviceable wagons on October 1 was ample for the traffic operating. They had 145,700 wagons under repair, 8.4 per cent of ownership, and the President of the Pennsylvania sounded a note of warning about the risk of letting the stock deteriorate. On October 1, for the first time in recent railway history, less than 1,000 steam locomotives were available for traffic. Only 474 electric locomotives were fit for service, 68 fewer than a year earlier, and 26,255 diesel units constituted 95 per cent of effective motor power. Altogether the railroads owned 29,713 locomotives of all types; in 1948 they owned 41,851. But for this reduction of 12,138, or 29 per cent, in the locomotive stock and the efficiency of diesel power, the railroads could not have operated at a ratio of 81 per cent in eight months to August 31. They have ordered 376

new diesel units and 27 gas turbines, but not a single steam or electric locomotive.

By the end of August the financial position improved appreciably. The Pennsylvania reduced its deficit by 65 per cent from \$12 million in June to \$4 million and the New York Central halved its June deficit of nearly \$13 million. The P.R.R. cut operating expenses by 15 per cent and the N.Y.C. by 12 per cent. For all Class 1 railways operating revenues were down \$882 million (12.5 per cent) and operating expenses were reduced by \$532 million (9.6 per cent). Earnings (before charges) were 36 per cent lower and net income for eight months dwindled by 41 per cent to \$278 million, but at the end of June net income was only \$125 million, so that the railroads may now be in a less precarious position. It is to be hoped that they will surmount the difficulties of this period of industrial recession in spite of the subsidised competition of road, water, and air transport.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of Correspondents)

Cross-Channel Steamer Design

November 11

SIR,—How much farther are the designers of our cross-Channel ships going to subordinate practicability to their prejudices in the matter of appearance? For some reason they think that a ship will look old-fashioned if it does not have a squat funnel, suitable perhaps for a diesel vessel (though this may be doubted) but quite unsuitable for an oil-burning turbine.

A case in point is the new Southern Region *Maid of Orleans*, whose bridge is considerably higher than its funnel, giving it the appearance of an inordinately top-heavy diesel tug. But the limit of absurdity has been reached with the motorcar ferry *Lord Warden*, out of whose ridiculously squat funnel now project two enormous stove-pipes, so as to carry the smoke and smuts from it clear of the deck, upon which anybody other than a modern naval architect would have known at a glance that they must descend. The appearance of this unhappy vessel beggars description, and she must surely be a reminder to all who see her of the melancholy decline in the standards of grace and elegance which have so long been maintained by British ship designers and are still magnificently displayed by the imposing and beautiful *Canterbury*.

Yours faithfully,

HENRY MAXWELL

106, Ashley Gardens, S.W.1

European countries in 1956 has resulted in a pronounced difference in comfort between first and second class. In the latter it is the exception to have three-a-side seating. First class travel appears to account for quite a high proportion of the whole and some principal expresses include no second class accommodation.

In view of the financial position of British Railways it is surprising that little publicity has been directed towards encouraging first class travel, despite the additional revenue it brings. Cheap Saturday fares on the St. Pancras to Manchester route have recently been announced, and it will be interesting to see whether these are maintained when the new diesel Pullman services are introduced next autumn.

Speedy action could profitably be taken to make all second class accommodation four-a-side, to increase the proportion of first class accommodation available, particularly in long-distance trains, and to encourage first class travel by a campaign such as the London Transport Executive is now staging with "Hop on a bus." Now that the private car and the aeroplane—and not the motorcoach—are their most serious competitors, British Railways should excel in comfort and speed and indeed in every other way. An imaginative policy of promoting first class travel would help.

Yours faithfully,

F. GLADWIN

30, Woodlands Road, Romford, Essex

First Class Travel

November 21

SIR,—Criticism in my letter published in your September 12 issue of the decision to provide only second class accommodation on the diesel multiple-unit trains to run on the St. Pancras-Bedford services seems justified, for no argument to the contrary has been put forward. The Midland Division of the London Midland Region is not alone in suffering from this levelling-down of facilities.

Ever since the two-class system was generally adopted on railways in Britain, there has been a tendency towards providing accommodation of a very high standard in the lower class. On the former London Midland & Scottish and London & North Eastern Railways this even extended to three-a-side seating in long-distance trains, a tradition followed by British Railways on the lines formerly owned by those systems. Although the Great Western and the Southern did not adopt this practice, accommodation was still of a high order. The result is that on British Railways first class travel is regarded by most people as an unnecessary luxury. Consequently such first class accommodation as is provided is little used, whilst second class is full.

The changeover to the two-class system in most

The First Excursion Train

November 18

SIR,—From time to time we are asked which was the first publicly-advertised railway excursion train. In "The Thomas Cook Story," Mr. John Pudney gives pride of place to a special train from Wadebridge to Bodmin to allow the people of Wadebridge to witness the public execution of two brothers, Lightfoot by name, convicted on a murder charge. The date is given in his book as 1838.

Recent research by Mr. C. R. Clinker has shown that this morbid event in fact took place two years later, on April 13, 1840, and it seems that it cannot after all claim pride of place in railway excursions. The earliest we can find is that which the London & Southampton Railway ran on May 30, 1838, to take people to Epsom Races; this was advertised in *The Times* of the previous day, and attracted many more people than could be accommodated.

Does any reader know of any publicly-advertised railway excursion of earlier date?

Yours faithfully,

D. INKPEN,
Archivist

Thos. Cook & Son Ltd., Berkeley Street, Piccadilly, W.1

THE SCRAP HEAP

Solitary Crime

A nineteen-year-old labourer admitted at Glamorgan Assizes that he put bricks on a railway line—the sort of crime, said the judge, “often committed by people inclined to lead a solitary existence.” He was placed on probation for two years.—*From the “Daily Express.”*

Words on the Way Out

A correspondent states that on November 25, 1958, while workmen were burning scrap wood from the disused station of the West London Extension Railway adjacent to West Brompton Station, the L.T.E. fascia board, bearing the words “The Way Out,” was removed from the bottom of the disused staircase. The definite article has been omitted from similar notices for many years, and one wonders whether modern productivity and utility will eventually remove the word “Way,” leaving only the word “Out.”

Taxing “Travellers”

An extension of weight for the luggage of commercial travellers to be carried free on the railways (of Natal), is provided for by a new law. Under this law, passed in August, commercial travellers doing business in the colony of Natal on behalf of any company or individual, not possessing a commercial establishment there already taxed, will in future have to take out a licence. This will cost £10 a year. The fine for infringement is £40, with liability, in case of non-payment, to imprisonment, with or without hard labour, for a term not exceeding three months.—*From “The Financial Times” of December 1, 1898.*

Three Gauges Through One Tunnel

Tunnels containing two tracks of different gauges, parallel, gauntleted, or three-rail (one rail shared), are found in several parts of the world. Three

gauges through one tunnel is believed to be unique. The accompanying illustration shows a mixed, three-rail 5-ft. 6-in. and 2-ft. 6-in. industrial line of the R.C.A. de Minas (Arnao Zinc Works) near Arnao, in Northern Spain, parallel to a metre-gauge tramway. The tunnel is also used by road traffic. There is no signalling, but road traffic is held up during the passage of a train.

Private Coach on the Ulster Railway

A private coach ran on the old Ulster Railway, later part of the G.N.R.(I), from Lurgan to Belfast in 1845. It belonged to Lord Lurgan and had been built by Thrupp, coachbuilders, of London, whilst the undercarriage and wheels were designed by John Goodwin, Engineer to the railway company. According to a contemporary description, “The carriage of Lord Lurgan on the Ulster Railway was of late built at the expense of his Lordship and the Company. The vehicle is four-fold the size of a road family carriage seating 12 persons. The carriage-work is very fine in oak painted black outside with silver mountings and Lord Lurgan’s coat of arms on the side panels. The interior is well furnished in crimson and gold with red leather upholstery on horsehair and spiral springs. The coach is mounded on well sprung bogey with six wheels and is worthy of the rail line bringing the elegance of the highway to the railway.”

Unobtrusive Help

In my many travels . . . I have found railway staff very quick on the uptake, helpful and exceedingly unobtrusive in the way they help. They have always accepted me as a sensible being and done what I asked. This porter gave me the information I needed. My train was in; would he take me along and just ask the guard to see me out at my own station? That was all. And that was what he did—no more. He did not

worry me to go in the guard’s van as some people do. He put me in a good seat and shook hands and refused a tip. I never saw the guard at all, until 10 minutes before I got out at my home station, he came into my compartment . . . and sat down for a “chat” till we ran in. Again, his conversation was very ordinary, there was no trace of constraint. . . . He did not ask how I became blind and deaf.—*From “The Times.”*

Verses by the Way

The share capital [of Thos. Cook & Son Ltd.] is owned by the British Transport Commission, but they are still run like a private firm. Less poetically, though, than in their founder’s time. Mr. Cook’s first brochure of 1845 was largely in verse, such as:

But onward, snorting wild,
Like a monster in its glee,
The locomotive flies with us,
A passing sketch to see.

This concludes a 12-page description of the journey from Nottingham to North Wales.—*“Peterborough” in “The Daily Telegraph.”*

Christmas Trees by Rail

Movement is in full swing of millions of Christmas trees from the Maritime Provinces of Canada to U.S.A. markets, principally in New York, New Jersey, Illinois and Texas. Last year, 12,000,000 trees were conveyed. Two-thirds of them were cut in New Brunswick and Nova Scotia. Canadian National Railways moved nearly 2,100 wagonloads of Christmas trees from Nova Scotia, and over 2,400 from New Brunswick. Traffic continues until the second week in December. Trees are conveyed in covered wagons specially allocated, and there is no interference with normal goods traffic.

Mr. Backward Facing

(See our issues of November 7 and 14)

Irishmen’s tears so copiously shed
Are dried by Great Northerners’ hands,
For railwaymen’s fears, or so it is said,
Are echoed in far-apart lands.
Can I cry a tear for South Eastern & Chat.

That illustrious Managing Committee?
Or even go a decade or so back
When the Blackwall ran into the City?
Victoria & Pimlico, now that was a one
Which derived full many a penny
By letting its lines for others to run
And of rolling stock just hadn’t any.
“Railways” is surely a valiant name
And “British” means something great still.

So why this desire to live on the fame
Of something that’s ground in the mill?
Too much looking backward is bad for the soul,
The need is to turn from the hoary,
And by courage and striving, press on for the goal

To ensure that B.R. reaches glory.
A. C. P.



Mixed 5-ft. 6-in and 2-ft 6-in gauge tracks (left) parallel with metre-gauge line through tunnel in Northern Spain, used also by road traffic

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

EAST AFRICA

Accompanied Motor Scooters

Following the successful introduction of the accompanied car scheme whereby passengers take their motorcars with them on journeys between main stations on the Kenya-Uganda line, the East African Railways & Harbours has introduced a similar scheme for accompanied motor scooters. This facility came into effect on December 1, as an experiment, between Nairobi and Mombasa; the charge is 40s. a scooter for the return journey irrespective of weight.

Passengers book space at the same time as sleeping accommodation is reserved on the train. Scooters are brought to the station for booking and loading not less than half an hr. before the scheduled departure time of the train. At destination, scooters are available to their owners within 15 min. of the arrival of the train.

NEW ZEALAND

Bluff Line Services Cut

Almost all the remaining passenger train service between Invercargill and Bluff, 17 miles, was discontinued from September 29. The only services retained are the 8 a.m. from Bluff and the 4 p.m. from Invercargill, primarily for school children. There have been no passenger services on this line on Saturdays and Sundays for some time. With populations of only some 35,000 at Invercargill, barely 3,000 at Bluff, and no centres of population in be-

tween, there is little scope for heavy traffic. The number of passenger journeys, never very great, had been reduced by road competition to fewer than 500 a day, spread over six trains.

VICTORIA

Suppressing Rowdiness in Trains

Lightning raids are being made by the "anti-vandal squad" in a campaign to stamp out rowdiness in Melbourne suburban trains. The Railways Commissioners have announced that since the beginning of the year the squad has detected more than 600 cases of wilful damage, disorderly conduct, and various by-law offences.

Melbourne Underground Railway

The Melbourne Underground Railway Investigation Committee, in an interim report, has recommended the construction of a £25,000,000 underground line.

The plan provides for a double track line from Richmond which will leave the existing lines in Jolimont yard, and head northwards by a loop line behind Parliament House, running under Latrobe Street to Spencer Street and turning back to Flinders Street. Another single track line will leave North Melbourne and follow the same route in the reverse direction to swing in from the Treasury Gardens to Flinders Street Station.

Six new city stations will be sited at Treasury Gardens, Exhibition and Latrobe Streets, Elizabeth and Latrobe Streets, King and Latrobe Street,

Spencer Street and Flinders Street.

The committee reported that the growth in population and increasing traffic indicated the need of the underground railway to ease the strain of parking in city streets.

Its plan for a three-track underground railway would allow 80 per cent of citybound travellers from suburban areas to come directly into Melbourne. About 20 per cent of the passengers might be required to transfer from one train to another at Richmond or North Melbourne.

The committee, headed by Sir Arthur Warner, Minister for Transport, comprised the Co-ordinator of Transport, and representatives from the City Council, Town and Country Planning Board, Traffic Commission, Board of Works, the Victorian Railways, and the Tramways Board.

Work on the underground railway could begin in three years' time if the money was made available. To do this an addition of £1,500,000 a year would have to come from State or Commonwealth Government sources.

QUEENSLAND

Diesel Haulage

Increased power and the elimination of locomotive service stops between Brisbane and Rockhampton has enabled the Government Railways diesel-electric locomotives to cut journey times of livestock trains by half. The time for steam-hauled trains for the 396-mile run of 36 hr. has been reduced to 18 or 19 hr., and stops for the exercising of stock are now unnecessary.

CANADA

Diesel Locomotives for C.P.R.

The Canadian Pacific Railway, during the period October 22, to November 21, received five 1,200-h.p. branch-line diesel locomotives from General Motors Diesel Limited, completing an order for 31 units.

ARGENTINA

General Mitre Railway Accidents

A serious accident occurred on November 8 when, in broad daylight, a steam train from Retiro to Pergamino on the General Mitre Railway ploughed into the rear of an electric suburban train which had left Retiro a few minutes earlier for Tigre and had been stopped by signals shortly afterwards, at Empalme Maldonado.

Twenty-one passengers were killed and 102 injured, many seriously. Severe damage was caused to rolling stock, track, and installations. The cause of the accident was apparently a

Diesel Operation in Sierra Leone



Hudswell Clark diesel locomotive powered by a Paxman Hi-Dyne engine hauling empty rolling stock in Freetown before leaving on regular trip to Pendembu

failure in the signalling system, the railway having announced previously that trains were running behind schedule for this reason. Some of the casualties were due to electrocution because the current was not cut off immediately.

On October 28, a local train from Retiro to Zárate on the same railway was stopped by signals near L.M. Drago Station, and while stationary was run into at speed by an electric suburban train from Retiro to José León Suarez. Serious damage was caused to rolling stock, and 22 passengers and the driver of the electric train were injured. The two signalmen involved were taken to the police station for questioning, and as a result the signalmen of the section declared a strike immediately, which was not cancelled until the two men were released.

Roca Railway Electrification

The final studies of the plans for electrification of the General Roca Railway between Plaza Constitucion and La Plata via Quilmes and Temperley have now been completed and it is probable that their execution will be financed by French interests, which will contribute 1,200 million pesos. It is expected that work will commence next year and be completed in 1962.

UNITED STATES

Loans for Railways

The Interstate Commerce Commission has established a Section of Loans, to assist in financing railways that are urgently in need of new equipment, and are unable to obtain the necessary finance from ordinary commercial sources without a government guarantee. The first applicant for such assistance is the New York, New Haven & Hartford Railroad, which has asked for a guaranteed loan of \$16,542,460 in order to purchase 60 general purpose diesel-electric locomotives of the Electro-Motive "FL-9" type.

The New Haven contemplated this purchase early in 1957, but has not succeeded in borrowing the amount required. The Boston & Maine Railroad also has under consideration applying to the I.C.C. for a guaranteed loan of \$12,000,000 to finance the construction and equipment of a new marshalling yard.

Increasing Sleeping Car Use

The extension of sleeping car facilities in enclosed rooms to second class passengers is now increasing, in an endeavour to increase sleeping car use. Recently the Missouri Pacific and Kansas City Southern Railroads inaugurated a "one-fare" plan, whereby passengers holding coach tickets are admitted to sleeping cars, hitherto reserved for passengers holding first class tickets only, on payment of the normal sleeping car supplement.

The Texas & Pacific Railroad is now honouring coach tickets in sleeping cars on the "Westerner," between

Dallas and El Paso, and the "Louisiana Eagle," between Fort Worth and New Orleans, with the sole exception that the lightweight sleepers of the latest type in these two trains are excluded. The Chicago, Burlington & Quincy at present is the only United States railway which has had special single room sleeping cars of the roomette type—known as "Slumbercoaches"—built for coach passengers, and these have proved so popular that they are booked to capacity almost daily.

SWITZERLAND

New Tunnel at Baden

By agreement with the Canton of Aargau, which is bearing the cost, the Swiss Federal Railways are to re-route the Basle-Zurich main line through a new tunnel under the town of Baden, to ease the traffic problem over certain main roads. Starting from the south end of the passenger station, the tunnel will be about $\frac{3}{4}$ -mile long, and on a maximum gradient of 1 in 92 $\frac{1}{2}$. Part of it will be constructed by cut-and-cover.

Funicular Replaced by Rack Railway

After successful conversion of the old-established Ouchy-Lausanne ropeworked funicular to a rack-and-pinion railway, the 60-year-old funicular from Rheineck in the Upper Rhine valley to Walzenhausen has been similarly converted. The average gradient is 1 in 4.5 and the maximum not steeper than 1 in 3.85. The total length is 1,374 yd. The new electric motorcoaches are 36 ft. long, and are operated at 600 V. d.c.; each is of 285 h.p. has a maximum speed of 18 m.p.h., and weighs 17 tons.

Total passenger capacity is 80, compared with funicular operation.

Doubling Thalwil-Zug Line

Because of increased traffic between Thalwil, on the Lake of Zurich, and Zug, including all the Zurich-St. Gotthard-Italy traffic, doubling has become necessary. The Federal Railways have decided to begin by doubling the three miles between Thalwil and Horgen-Oberdorf, at the mouth of the Horgen tunnel, which is 1 $\frac{1}{4}$ miles long. Later, doubling will be taken in hand beyond a second tunnel and viaduct, between Littli and Baar.

FRANCE

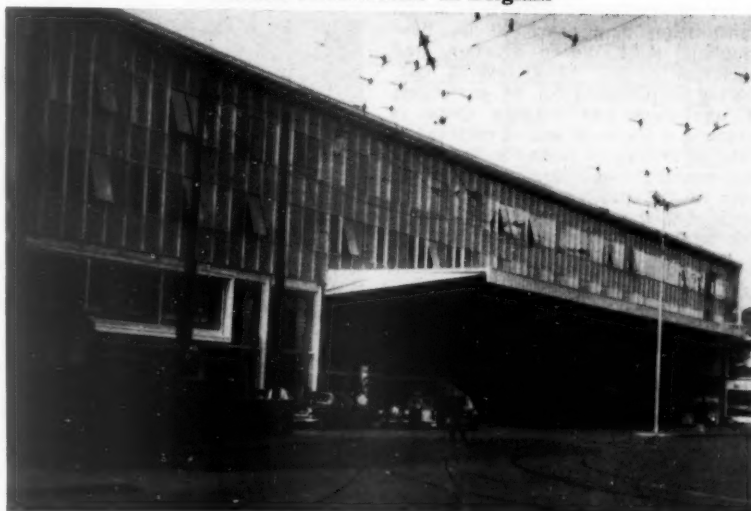
European Tourist Ticket

In collaboration with 12 other European railways, the S.N.C.F. is issuing, from January 1, 1959, a first class season ticket valid for two months giving unlimited travel on the railways concerned. The ticket will be on sale only to bona-fide residents in the U.S.A. and Canada, and is to be sold at a price of U.S. \$125. It is to be sold under the name Eurailpass, and will exempt the holder from seat reservation fees and supplements for special trains such as the "Trans-Europ Expresses," but payment must still be made for Pullman and sleeping car accommodation.

Flood Damage

Considerable interference with traffic on the Clermont-Ferrand-Nîmes line was caused recently by flooding in the Gard area of the Rhône Valley. Heavy rain caused two tributaries to overflow, and railway track and bridges were washed away over a wide area.

Station Architecture in Belgium



Photo]

[F. S. Middleton

Frontage of reconstructed Liège Guillemins Station, Belgian National Railways, showing recessed pull-in, to keep street clear of traffic. Extension of electrification from Liège to the German frontier is now envisaged

Articulated Railcar for Brazil-Bolivia Railway

All-steel construction, for first class passenger service



Metre-gauge articulated railcar for Corumba-Santa Cruz section of Brazil-Bolivia Railway. Note air-operated doors, also neat exterior design

A DOUBLE-ENGINE articulated diesel railcar was shipped recently by D. Wickham & Co. Ltd. for first class passenger service on the metre-gauge Corumba-Santa Cruz section of the Brazil-Bolivia Railway.

The two all-steel stressed tubular bodies total 67 ft. 2 in. long when mounted on the three bogies. The inner axles of the two outer bogies are driven by B.U.T. Leyland six-cylinder "0680" horizontal diesel engines, mounted one on each body with its transmission comprising 20 in. fluid coupling, R.14 Wilson gearbox, and Wickham double bevel reverse box. Seating is provided for 68 passengers of one class and luggage space is arranged at the outer end of each car in addition to luggage racks for hand baggage running longitudinally down both sides of the passenger compartments. Additional heavy luggage space is available in each driver's compartment.

Interior Finish

The ceiling is covered with Rexine leathercloth and the roof covering over the luggage racks is neutral tinted corrugated rubber sheeting. Interior paneling is of light oak patterned Waverite on aluminium sheet. Over the windows and blinds running the complete compartment length on each side is an embossed perforated aluminium ventilation panel communicating with the ventilating louvres on the outside sheeting. Beading, where necessary, is of anodised aluminium, and the luggage racks over the seats are chromium plated.

Two lavatories with tip-up wash basins are fitted at the inner end of

one car; water is carried in tanks under the car and lifted by compressed air. The other car body has two paraffin operated refrigerators for carrying light refreshments served en route.

Simultaneous remote control of the two engines and transmissions is fitted in the driver's compartments, one at each end of the twin unit, but no multipin couplings or jumper cables have been provided for the intercoupling to other twin units, although these could

be incorporated if required later on.

Air operated two-leaf doors are fitted, two each side, at each end of the unit operated by the driver from the control position. Emergency operating controls are fitted near each doorway.

Control Equipment

The driver's positions on the right at each end of the car are completely enclosed, and the controls are mounted in a desk fabricated from sheet steel made up of five units. On the two bottom units are mounted pedals for deadman parallel switch and compressed air sanding. The centre column unit contains a terminal board, and also control wiring gallery and fuses.

Mounted on top of this is a unit comprising an eight-positioned remote throttle controller, four-speed gearbox control, forward and reverse control, indicator lamps for engine oil pressure, cooling water temperature, and forward and reverse positions. Centred in this panel is a master key which locks all controls in the "off" position before it can be removed.

On top of the controller is an inclined panel housing main air pressure gauge, compressed air duplex brake gauge, speedometer with distance recorder and eight-day clock. Also mounted on this panel are switches controlling panel lighting, head lamps, and marker lights. Behind the driver's seat and mounted on the bulkhead is the combined switch and fuse board controlling the interior lights.

Braking, which is of the Westinghouse straight air type, is controlled by the Westinghouse self-lapping brake



View through train unit, showing aluminium ventilating panel over windows and blinds

valve mounted on the left of the driver's seat. A hand screw brake operating shoes on the adjacent bogie is fitted to the right of the driving position.

Bogies

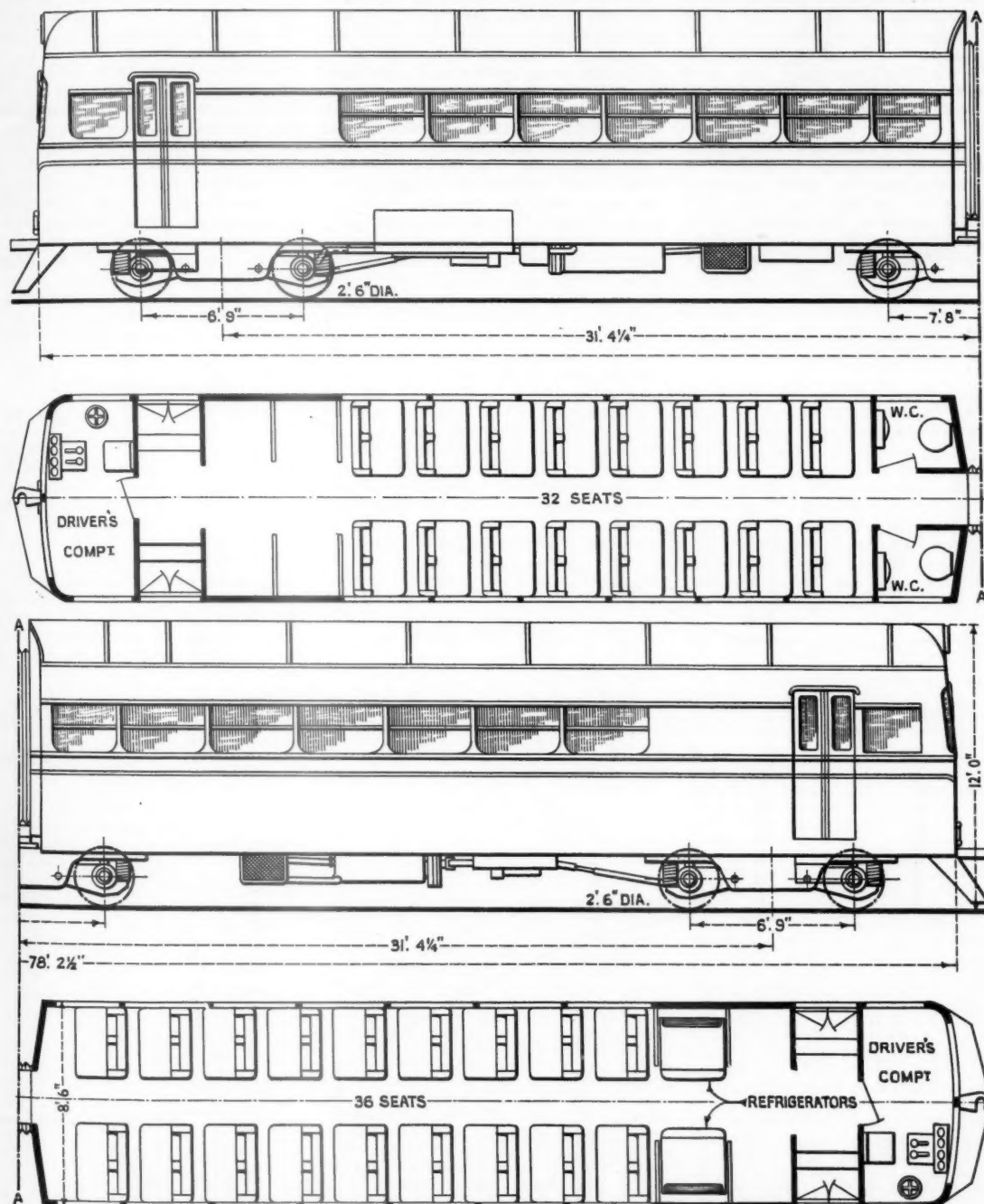
Bogies are of mild steel fabricated box section. The axles are located by radius arms fitted with Metalastik bushes. In place, however, of the

under-slung semi-elliptic spring normally used, the radius arms are extended beyond the axlebox to provide a table for a coil spring of square section steel. — Woodhead Monroe hydraulic shock absorbers are fitted inside the springs. Axlebox bearings are of the SKF self-aligning roller type with one bearing fitted in each axlebox.

Bolster springing is also by coils; the

end bogie bolsters each have two, one on each side, and the centre bogie four, two each side. These springs besides taking vertical loads are also responsible for side control. Longitudinal braking and traction loads are controlled by the bolster sliding in manganese steel lined guides. Clasp type braking, with two shoes on each wheel, operated by compressed air, is fitted on all three bogies;

(Continued on page 685)



Elevation and plan of twin railcar unit, showing space for heavy baggage, and position of refrigerators for light refreshments

Northern Line Electrification, N.S.W.G.R.

To accelerate working of heavy traffic on 1 in 40 gradients

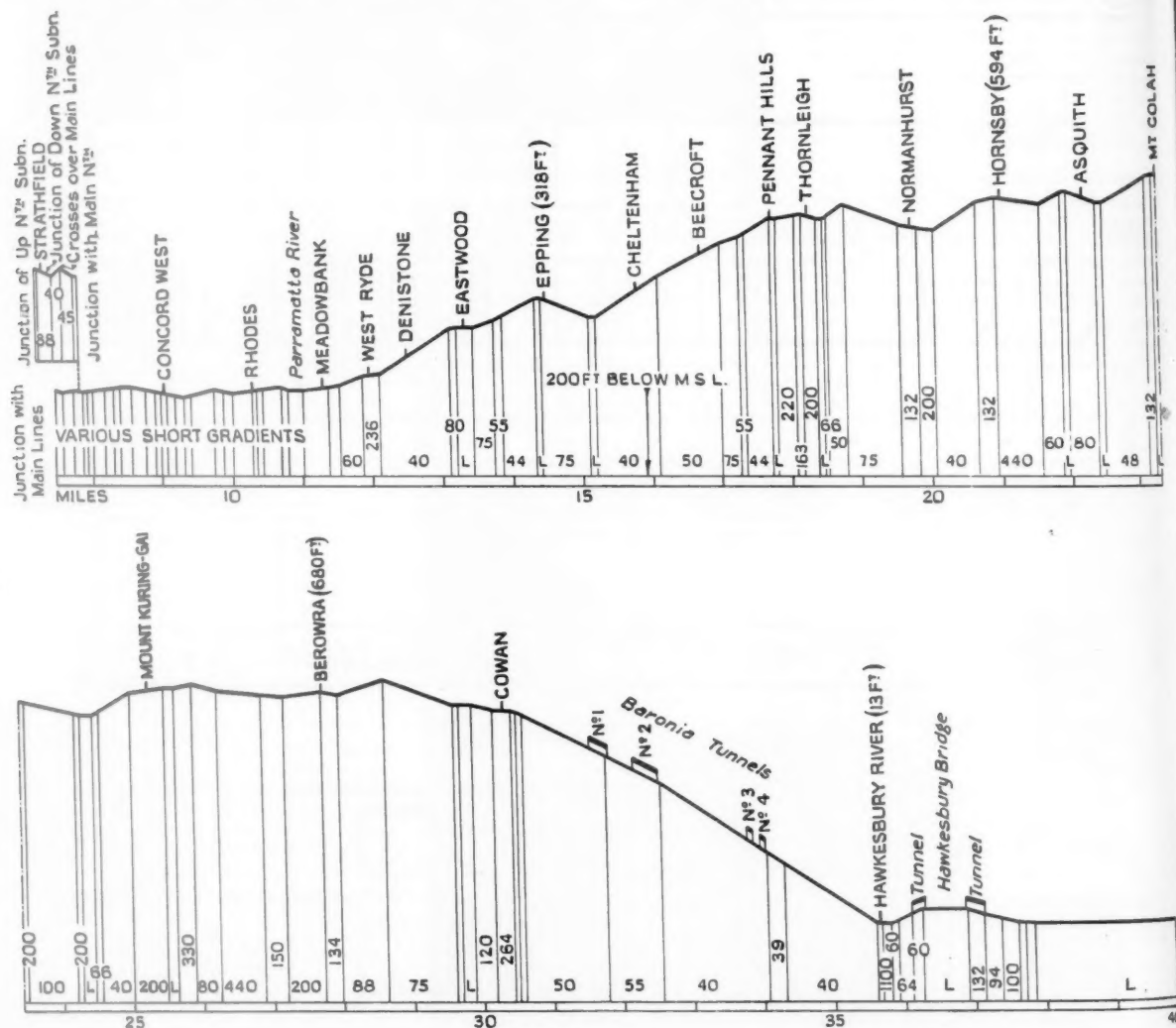
TWO of the New South Wales main lines radiating from Sydney have to surmount mountainous terrain with steep gradients. The Western main line negotiates the Blue Mountains beyond Penrith, 34 miles from Sydney, and is now electrified to Lithgow, 97 miles. The last section to that station was completed and formally opened on June 22, 1957; the work involved has been described in these pages from time to time, notably in the issue of August 2, 1957.

The Northern main line via Hornsby, Gosford, and Newcastle to Brisbane is also handicapped by steep gradients, especially in the 24 miles from West Ryde (12 miles) to Hawkesbury River (mile 36), where there are long sections having a ruling gradient of about 1 in

40. As this line carries interstate, through and local passenger, goods and coal traffic, it was recognised some time ago that it, like the Western line, would also have to be electrified, at any rate as far as Gosford (50 miles) in the first instance. Actually, the project was not so formidable as it might seem, because the initial 21 miles to Hornsby were electrified some years ago, to facilitate the working of the suburban service over the heavy gradients. In fact, that section included a rise of about 500 ft. out of the Sydney area.

It should be explained that the Western and Northern main lines follow the same route for the first 7½ miles from Sydney Central to Strathfield. There the Northern line swings round from west to north, a fly-over across

the Western tracks facilitating traffic movements. As the accompanying gradient profile shows, the initial mainly-level four or five miles from Strathfield to West Ryde are followed by a 2½-mile rise through about 200 vertical feet to reach Epping, altitude 318 ft. Continuing with a ½-mile counter grade, the line then climbs continuously for 2½ miles to Pennant Hills through a further 300 vertical feet. The rise in these two sections, aggregating just over five miles in length, is thus at an average inclination of about 100 ft. a mile, or 1 in 53-55, though the fall between them provides a much-needed easement of effort. From Pennant Hills to Hornsby the profile undulates with a rising tendency to reach an altitude of all but 600 ft. at the latter station.



Gradient profile of the Northern Line from Strathfield to Mile 40

Hornsby is at present the terminus of electric working and of the suburban multiple-unit service, 21 miles from Sydney Central.

Extension of Electrification

In July, 1957, work began on the extension of electrical equipment from Hornsby to Gosford (mile 50), and it is planned that of these 30 (overall) miles, the first 10 to Cowan will be completed and in service during November, 1958, and the next five miles to Hawkesbury River by May, 1959; the final 15 miles onwards to Gosford are scheduled for completion in December, 1959.

The most exacting gradients in either direction on the route are against south-bound trains between Hawkesbury and Cowan, the entire five miles being an unbroken ascent with gradients between 1 in 39 and 1 in 55, three of these miles being continuously inclined at 1 in 39-40. The rise in the five miles is about 650 ft. vertically, but the summit $1\frac{1}{2}$ miles south of Cowan is over 700 ft. above Hawkesbury and sea level. Beyond Hawkesbury the line is undulating and generally fairly level, most of the "banks" encountered being momentum grades.

Electrical Equipment

The electrical equipment being installed between Hornsby and Gosford is of the 1,500-V. d.c. overhead type similar to that in service on the Western main line and in the suburban area; locomotives and rolling stock will therefore be interchangeable. Altogether 64 additional electric track-miles are involved. Incidentally, this electrification beyond Hornsby will enable the suburban electric services to be extended to Cowan in November. Passenger train services terminating at Gosford after

December, 1959, will be worked with electric locomotives or by some of the new inter-urban multiple-unit sets now on order. Locomotives of through passenger and goods trains will be changed at Gosford from electric to either steam or diesel and vice versa.

It is noteworthy that the whole of the overhead wiring equipment now being extended is being designed and erected by the Railways Department. It consists of the simple catenary type throughout and independent registration of the wiring of up and down main tracks has been adopted. Catenary wires used are 0.8 sq. in. (37/0-165) and 0.5 sq. in. (37/0-132) h.p. copper for the main lines, depending on loading and substation spacing, and 0.25 sq. in. (19/0-131) for sidings. Contact wires will be 0.3 sq. in. cadmium copper throughout.

Four substations will be installed along the route at Cowan, 31 miles from Sydney, Hawkesbury River (36 miles), Woy Woy (43 miles) and at Gosford (50 miles). Cowan and Hawkesbury Substations are each to be equipped with 2/4,000 kW. mercury arc rectifiers and will have automatic energy dissipating control equipment in connection with the use of regenerative braking. Woy Woy and Gosford substations are each to be equipped with 2/2,500 kW. rectifiers. A 4,000 kW. rectifier will be added to the existing rotary converter capacity at Hornsby substation. Each of the new substations as well as the d.c. sectioning huts will be under supervisory remote control from Strathfield substation in the inner Sydney suburban area.

With 50 miles of this heavy-traffic line electrified and main-line goods and passenger trains hauled by electric locomotives, considerable improvement in



Map of the Hornsby-Gosford section now being electrified

speeds of both will be possible up the steep gradients. This will be of particular importance between West Ryde and Hornsby, where goods, long-distance passenger and stopping suburban electric trains all share one pair of tracks. In fact, this electrification is expected to postpone for many years the hitherto-proposed quadrupling between Strathfield and Hornsby, thus obviating the necessity for much heavier capital outlay as well as effecting a considerable reduction in operating costs.

Articulated Railcar for Brazil-Bolivia Railway

(Concluded from page 683)

the two outer bogie brake riggings are also coupled to the adjacent driver's hand screw brake wheel.

The principal dimensions are as follows:—

Gauge	1 metre
Length over headstocks	78 ft. 2 in.
Width	8 ft. 6 in.
Height	12 ft. 0 in.
Tare weight	29 tons cwt. 10

The principal sub-contractors were:

Tubes	Accles & Pollock Limited
Springs	Jonas Woodhead & Sons Ltd.
Shock absorbers	Woodhead-Monroe Limited
Wheels and axles	John Baker & Bessemer Limited
Radius arm bushes	Metallastik Limited
Axlebox bearings	Skefko Ball Bearing Co. Ltd.
Engines	
Fluid flywheel	British United Traction Limited
R.14 gearbox	
Cardan shaft	Hardy Spicer Limited
Dynamo	C.A.V. Limited
Radiators	Leyland Motors Limited
Brake air pressure set	Westinghouse Brake & Signal Co. Ltd.
Fittings, air pipes	British Ermeto Corporation Limited
Outside panels	The British Aluminium Co. Ltd.
Windows	Quicktho (1928) Limited

Door control equipment	
Blinds	G. D. Peters & Co. Ltd.
Seats	
Interior panels	Bakelite Limited
Luggage racks	Deans & Son (Yorkshire) Ltd.
Diaphragm	A. G. Wild & Co. Ltd.

BRITISH TRANSPORT TEAMS IN ST. JOHN FIRST AID COMPETITIONS.—The Grand Prior's Trophy first aid competitions were held in the Porchester Halls, Paddington, W.2, on November 27. Mr. Horace F. Parshall, Director General of the St. John Ambulance Association, presided. The awards were presented by the Duke of Gloucester. Those who accepted invitations to be present included Sir Brian Robertson, Chairman of the British Transport Commission, and Mr. J. B. Burnell, Operating Manager, Central Road Services London Transport Executive. Among the members of the Committee of the St. John Ambulance Association were Dr. J. Sharp Grant, Regional Medical Officer, British Railways, Eastern Region; Mr. H. C. Lang, Regional Establishment & Staff Officer, Southern Region; Dr. L. G. Norman, Chief Medical Officer, London Transport Executive; and Mr. Alex J.

Webb, Chairman, London Transport Ambulance Centre. Teams participating included: (men) B.T.C. (Railways & Docks), Worktop, and B.T.C. Police, Liverpool Street; and (women) B.T.C., Baker Street.

BRITISH STANDARD FOR SEMI-ENCLOSED FUSES.—British Standard, B.S.3036: 1958, which deals with semi-enclosed electric fuses only of the re-wirable type, with ratings up to 200 A. and 250 V. to earth, specifies a range of sizes of fuse carriers and bases, suitable for a.c. or d.c. circuits. Each is assigned to one of six categories of duty according to the prospective current and time constant of the circuit. Presentation is similar to B.S.88 which also covers cartridge-type fuse links, but, because only a single type of fuse is now specified, it has been possible to be more precise. Also in B.S.3036, the symbols for categories of duty are directly related to the breaking-capacity rating, and the range of ambient temperatures for which the fuses are suitable is aligned with other specifications for switchgear: 35° C. average and 40° C. peak. Copies of this standard, price 8s. 6d., may be obtained from the British Standards Institution, 2, Park Street, London, W.1.

Diesel Railcar and Locomotive Maintenance at Stratford

Shed layout and organisation of maintenance and refuelling at Eastern Region depot to ensure maximum user of motive power

MAINTENANCE of diesel railcars and main-line diesel locomotives working on the Great Eastern Line of British Railways, Eastern Region, is carried out at Stratford Depot. As recorded in our November 14 issue, a shed has been built primarily for railcar maintenance, but diesel locomotives also are dealt with pending construction of a building especially for locomotive maintenance.

The shedmaster, assisted by a diesel foreman, is responsible to the District Motive Power Officer, Liverpool Street, Mr. A. R. Ewer, for the work, which falls into four main categories: daily, weekly, and monthly inspections, and three - monthly examination schedule. In addition, routine fuelling and lubrication is carried out. A total of some 50 railcars and locomotives is handled. At present these include: 10 Metropolitan-Cammell railcars; four Derby-built lightweight railcars; five

English Electric Type "4" 2,000-h.p. locomotives; 19 Brush Type "2" 1,250-h.p. locomotives; and 10 North British 800-h.p. locomotives.

Twenty-four Hour Service

Daily inspection of railcars takes place outside the shed, where these sets call for re-fuelling, and fitters deal with this work. The normal time taken is approximately half an hour. A similar inspection of every diesel locomotive normally can be performed during line service on turnround once a day. These locomotives can remain away from the depot for several days as there are suitable refuelling arrangements at Liverpool Street Station and Norwich. At the latter places fitters are available to attend to minor running adjustments, the topping-up of cooling systems, and general fault diagnosis.

For the major work of the diesel shed, a 24-hr. service is maintained with four

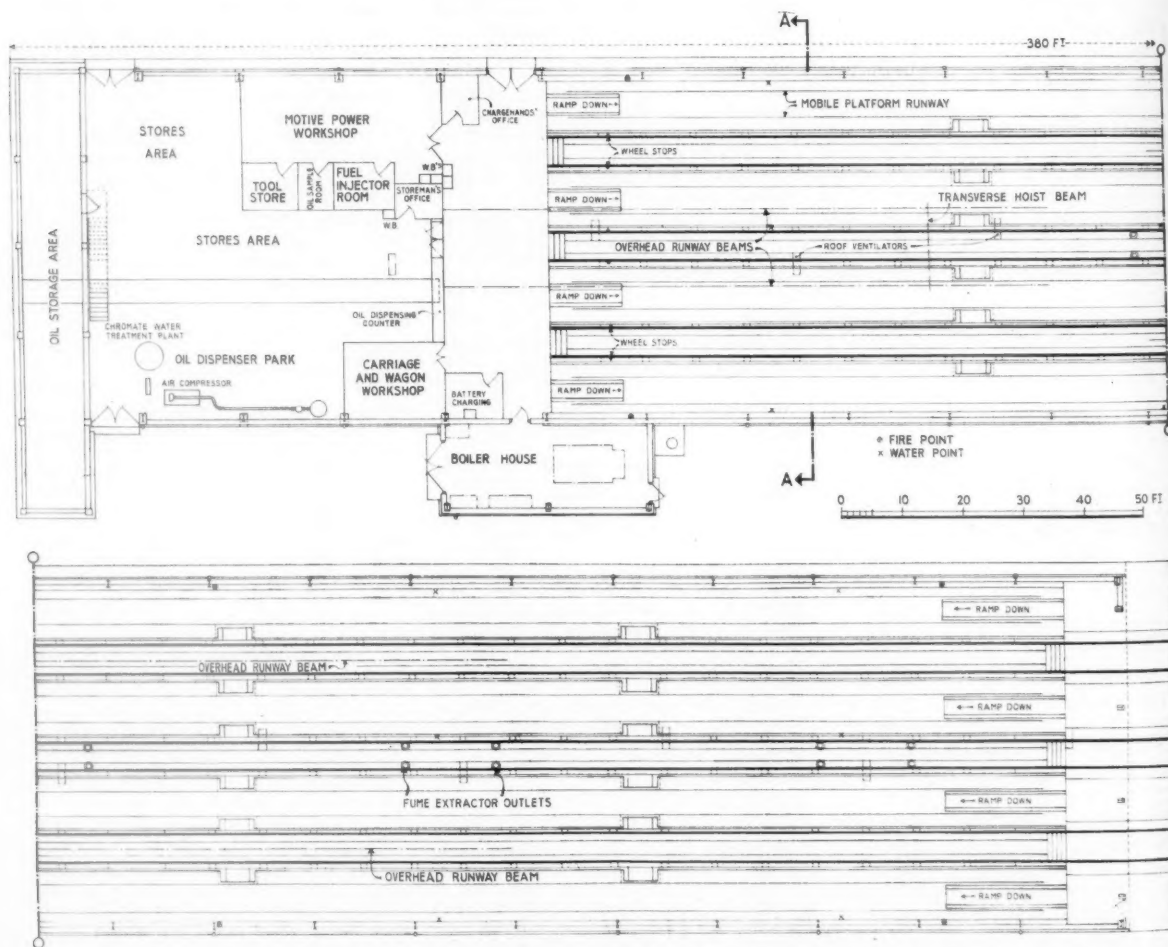
8-hr. shifts, suitably overlapping to give maximum effort between 8 a.m. and 4 p.m.

On each shift there is a chargehand and a nucleus of two skilled and two semi-skilled fitters. When fully staffed the diesel maintenance shed will have three electrical fitters.

Classification of Work

All work is classified either as suitable for skilled attention, such as power equipment, gearboxes, brake servo mechanisms, and specialised work on train heating boilers, or for semi-skilled labour which covers the superficial examination of bogies, wheels, brake shoes and rigging, sanders, buffers, and drawgear.

Additional labour is available on loan or on a "sharing" basis from the main Stratford Works, which come under the control of the Chief Mechanical & Electrical Engineer. It includes electricians



Plan showing general layout of the diesel maintenance depot at Stratford, British Railways, Eastern Region

who ensure the correct functioning of lighting equipment, and Carriage & Wagon Department staff, already familiar with tyre-wear gauges and with inspection methods used for all rolling stock. This staff undertakes much of the semi-skilled work mentioned previously and attends to railcar windows, seating, and so on. Labourers are available on a similar basis. Most of this supplementary labour force works an 8 a.m. to 8 p.m. day plus overtime as needed.

The "fuel squad" and a "lubricating squad," each comprised of one semi-skilled fitter and one fitter's mate, are appointed daily.

Raised Tracks

There are three tracks in the shed, carried on piers and beams to give easy access to diesel railcar engines and underfloor gear. At present one track is used mainly for locomotive examination and maintenance. Roof access to the power units is simplified by movable platforms running in floor recesses between the sets of railway track.

When a diesel locomotive or railcar arrives at the depot for weekly or monthly inspection, the diesel shed foreman produces an examination card of the appropriate type showing an abbreviated summary of the work to be done. This is read in conjunction with the driver's log and records of previous work carried out.

Work Completion Targets

Up to four two-car sets and four locomotives can be accommodated in the maintenance shed at any one time. Each is given a target time for completion, so that after re-fuelling and preliminary work by semi-skilled fitters outside, the unit can be moved to a pre-arranged position for more detailed examination with the minimum interference to other work.

The illustration on this page shows a weekly examination card for a typical diesel-electric locomotive. The cards are blue and form a check list of some 20 parts and systems due for examination. These follow items 1 to 15 which are listed separately on brown daily

WEEKLY EXAMINATION 1250 H.P. BRUSH/MIRRIEES LOCOMOTIVE			
DATE _____		LOCOMOTIVE NO. _____ DEPOT _____	
Item No.	Parts to be Examined	Date Completed	Check No.
16	Fuel Pipes and Injectors		
17	Cylinder Head drain pipes		
18	Compressed Air System		
19	Fuel Pump Linkage		
20	Vacuum Snifter Valves		
21	Radiator Shutters		
22	Locomotive Bogies		
23	Wheels and Tyres		
24	Turbo-Charger Air Intake Filters		
25	Fuel Filters		
26	General Lubrication		
27	Fuel Tanks		
28	Traction Motor Gear Case		
29	Radiator Fan Drive Gearbox		
30	Engine Lubricating Oil		
31	Carriage Warming Boiler		
32	Sanding Apparatus		
33	Engine		
34	Engine and Generator Compartments		

M.P.38 KX*

Typical weekly examination check card; water, oil and materials used are recorded on reverse side

examination cards. Master charts give instructions for dealing with each general type of unit and detail every operation needed.

Average times taken on the various operations, with the changing or replacement of filters and the renewal of cover joints, are added and, from the foreman's experience, translated into terms of labour shifts. This information is used only for fixing the target and for phasing other work. Allowance is made for a certain amount of repair work. Items are progressively marked off on the blue examination card with the date completed and the fitters' check numbers. Comprehensive long-term records are built up in the offices elsewhere for each locomotive and railcar for statistical purposes. Costing of work on each unit is not attempted.

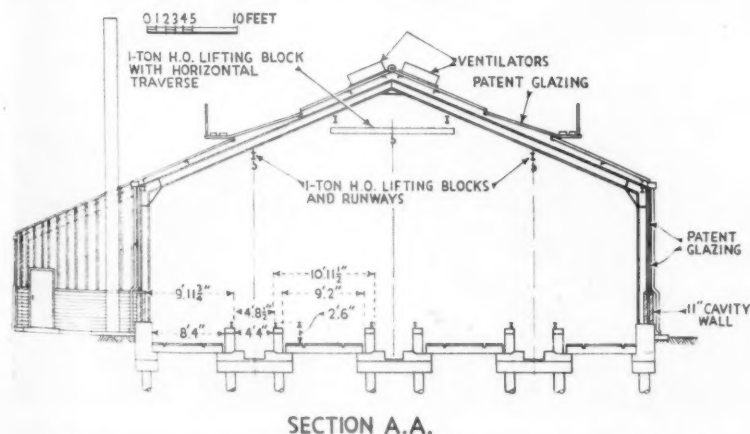
If a railcar engine or gearbox is found to be seriously defective, it is replaced by a new or reconditioned unit issued for the purpose by the main works stores. Designs of fork-lift truck for handling railcar engines are under consideration. Diesel-electric locomotive power units cannot be lifted in the maintenance shed, but cylinder heads and liners can be changed with lifting tackle manufactured by Herbert Morris Limited, running on overhead beams. Outside the main entrance doors there is a three-ton crane supplied by Geo. W. King Limited.

Lubrication Dispenser

Cleanliness and speedy operation are ensured for sump draining, oil renewal, and topping-up by special equipment illustrated in use on page 610 of our issue of November 14. Lubricating oil is fed by pipelines through pre-set flow meters from the bulk tanks in an adjoining room to charge up Wakefield Lubrequipment mobile dispensing tanks.

These tanks have separate compartments, one for new oil, delivered by compressed-air-driven plunger pumps for which air is available at 100 lb. per sq. in. from shed lineside supply points. A change-over cock and exhaustor on the dispenser enable a vacuum to be created in the used oil compartment to assist the quick draining of engines and transmission units.

The same make and grade of sump oil (Esso Estor HD30) is used for all diesel engines which are handled by the shed. Some of the dispensers also have compartments for lubricants to suit fluid couplings (Shell Hyspin 80), gearboxes (Shell Turbo 33), and final drives (Shell R1016), as required exclusively



Sectional end elevation showing lowered floor level and tracks on piers



Brush, English Electric, and North British diesel-electric locomotives at fuelling position, showing canopies

by railcars, and anti-freeze mixture for topping up railcar engine cooling systems. Oil suction and delivery flexible hoses and air lines retract automatically after use.

All dispensers are transported on wood pallets by battery driven Work-saver platform-lift trucks supplied by the Yale & Towne Manufacturing Company.

Other plant includes an Ingersoll Rand air compressor with Crompton Parkinson motor, a mobile de-scaling unit by Merrill Pumps Limited needed for one type of locomotive train-heating boiler, and a chromate water treatment plant built at Stratford Works which feeds rust-inhibited coolant along the shed to railside feed points for diesel locomotives. The piping is coloured purple for identification. There is a battery charging and testing room and starting batteries are occasionally given an external boost without removal, by means of a West-alite mobile charger.

Adjoining the chargehands' office is the motive power workshop where bench fitting is carried out on such items as cylinder heads, rocker gear, exhaust valve cages, and oil and water pumps. In a separate room, fuel injectors are cleaned and tested so as to maintain a small reserve stock for issue and exchange as required. A Sucher Trouble Detector is used as a stethoscope for checking fuel pumps and to identify injectors suspected of faulty functioning. This saves unnecessary engine dismantling in service.

In the motive power workshop is a de-greasing bath with paraffin spray and transparent cover to protect the operator's clothing. Armholes are provided with flexible sleeves. A complete plant constructed by Vokes Limited provides for cleaning and maintenance of panel-type air filters. These are washed, dried centrifugally by spinning, re-oiled and again spun to remove surplus oil.

Oil Viscosity Tests

One room is fitted out for sampling used engine oil to ensure that its viscosity has not fallen below a desired minimum which could indicate oil used too long in service or excessively diluted by fuel oil. Samples are occasionally

sent away for chemical analysis. Coolant is tested in the same room.

Consumable stores and filters, small springs, joints, and injector piping assemblies are stocked on a maximum/minimum basis on racks and vertical pin boards, most of which are colour-coded for identification of the make of engine or locomotive.

Labourers clean the shed floor regularly, to maintain conditions suitable for the precision machinery handled. There is ample daylight, through roof lights. Besides normal overhead electric lighting, lamps are fitted in the pits formed by the rail piers.

Heating Boiler

Space heating is thermostatically controlled to compensate for frequent opening of the shed doors and the boiler is fed by used lubricants pumped along a pipeline from the dispensers to a special storage tank.

Alongside the track approaching the shed are four vertical, cylindrical, diesel

fuel oil tanks, each of 25,000 gal. capacity. These can supply a pre-determined quantity at the rate of 90 gal. a min. to fill the tanks of locomotives through coupled flexible pressure pipelines. For railcars a conventional feed is used with hand control and a maximum flow rate of 30 gal. a min. The flow meter readings are mechanically clocked on the record card before and after fuelling.

At Stratford, weekly inspection of a diesel railcar can be completed in 6-8 hr., monthly inspection takes 12-16 hr., and the three-monthly examination schedule about two days. Equivalent times for a diesel locomotive are respectively 8 hr. (that is, one full shift), 16-24 hr., and three days. These are on the assumption that no serious rectification work is found necessary. Such work, as with major overhauls, becomes the responsibility of the Chief Mechanical & Electrical Engineer's Department.

The complete replacement of bogies, or power plant, heating boilers, control boards and so on by interchangeable units reconditioned in the main works, enables the time spent out of service to be reduced to a small fraction of the period required for a fundamental rebuild on a steam locomotive.

Principal Contractors

Contractors for the building and equipment include:—

Building ..	Wilson Lovatt & Sons Ltd.
Roller shutters ..	Chatwood Milner Limited
Steel racking ..	Waddells (Stratford Steel Equipment) Limited
Crane ..	Geo. W. King Limited
Lifting tackle ..	Herbert Morris Limited
Filter cleaning plant ..	Vokes Limited
Lubrication equipment ..	Wakefield Dick Industrial Oils Limited
Battery chargers ..	Westinghouse Brake & Signal Co. Ltd.
Platform lift trucks ..	Yale & Towne Manufacturing Company
Fuel oil meters ..	Wayne Tank & Pump Co. Ltd.
Heating plant ..	J. Jeffreys & Co. Ltd.
De-scaling unit ..	Merrill Pumps Limited



Interior of maintenance shed, showing concrete piers supporting tracks, and recesses for movable inspection platforms

RAILWAY NEWS SECTION

PERSONAL

Mr. R. R. Taylor, General Superintendent, Pacific District, Canadian Pacific Railway, has been appointed General Manager, Merchandise Services.

Mr. A. A. Pryce, Chief Mechanical Engineer, South Australian Railways, who, as recorded in our November 21 issue, is on leave pending retirement, joined the

We regret to record the death of Mr. James Hopwood, Chief Superintendent of Transportation, Rhodesia Railways, from 1943 to 1947.

In our November 14 issue we recorded the appointment of Mr. C. W. Guillebaud as Chairman of the committee set up to make an independent inquiry into railway pay. The other two members will be: Mr. E. Bishop, Joint Secretary of 17

Mr. F. M. Khan, Director General of Railways, Pakistan, 1950-52, and Chairman of Karachi Port Trust 1955-56, who, as recorded in our November 14 issue, has been appointed Minister of Communications, Pakistan, joined the Indian State Railway Service in 1918, as Assistant Traffic Superintendent and was posted to the North Western Railway. In 1922, he came to England to study at the London School of Economics and to acquaint him-



Mr. A. A. Pryce

Chief Mechanical Engineer, South Australian Railways, 1953-58



Mr. F. M. Khan

Appointed Minister of Communications, Government of Pakistan

railways as an Apprentice Fitter & Turner in 1910. In 1914 he was awarded the Railway Commissioner's Scholarship at the School of Mines and in January, 1916, returned to Islington as a Draughtsman. After three months he was transferred to the Engineer-in-Chief's Department. In 1923, Mr. Pryce went to Peterborough as Acting Engineering Assistant, and in 1927, returned to Islington as Plant Engineer. In August, 1944, he became Acting Works Manager, and in December, 1946, Works Manager at Islington. Mr. Pryce was appointed Chief Mechanical Engineer in January 1953.

Mr. R. J. Powell, Operating Superintendent, Nottingham Midland, London Midland Region, British Railways, has been appointed Operating Superintendent for the newly-formed Nottingham District. Mr. A. D. Cochran, who is in charge of Nottingham Victoria, Operating District, has been appointed District Operating Superintendent, Derby.

negotiating bodies in Local Government Service, and Mr. H. A. Clegg, who is in charge of a survey of industrial relations for Nuffield College, Oxford.

Western Region, British Railways, announces the following appointments:—
Mr. H. E. R. Bastin, District Commercial Officer, Bristol, as District Traffic, Superintendent, Bristol.

Mr. H. E. Hallett, District Operating Superintendent, Worcester, as Operating Officer, Divisional Traffic Manager's Office, Bristol.

Mr. N. S. Taylor, Claims Assistant to the Commercial Officer, Paddington, as Commercial Officer, Divisional Traffic Manager's Office, Bristol.

Mr. G. D. Wild as Mechanical & Electrical and Stores Accounts Assistant, Railway Accounts Office, Swindon.

Mr. G. G. Gibbon as Assistant to the Regional Accountant (Civil & Signal Engineering), Paddington.

self with the working of British Railways. In 1926 he revisited this country to study the publicity system of the L.N.E.R. In 1929, he was appointed Assistant Chief Publicity Officer, Central Publicity Bureau, Indian Railway Board. In 1930, he became Assistant Manager, Indian Railways Publicity Bureau, London, of which he was Manager from 1932 to 1934. On his return to India, Mr. Khan was posted to the N.W.R., in 1935, as Senior Assistant (Personnel) at Headquarters. In 1936, he was appointed Deputy Director, Establishment, Railway Board. In 1938, he returned to the N.W.R., serving as Divisional Transportation Officer, Deputy Chief Operating Superintendent, Deputy Chief Commercial Manager, and Senior Assistant (Movements). In January 1945 he was promoted to be Divisional Superintendent (Senior) and transferred back to the Railway Board as Director of Traffic, in which post he was confirmed in December of that year, and continued until Partition. In July, 1947, he was appointed General



Photo]

[Elliot & Fry

Mr. R. G. SmithAppointed Principal Traffic Costing Officer,
B.T.C., Liverpool Street

Manager of the North Western Railway. In 1950, he was appointed Director General of Railways. Mr. Khan retired from railway service in 1952, and, in January 1955, he became Chairman of Karachi Port Trust. He held this appointment until June 1956, when he was made Chief Election Commissioner.

Mr. R. G. Smith, Senior Costings Officer, Finance Department, British Transport Commission Headquarters, who as recorded in our October 17 issue, has been appointed Principal Traffic Costing Officer, Liverpool Street, joined the Great Western Railway in 1930, in the Stores Department, Swindon. Subsequently he obtained varied experience in the Chief Mechanical Engineer's Department and the Chief Accountant's Office, Paddington. During the war he served with the Transportation Section of the Royal Engineers, and, shortly after demobilisation, was appointed a special trainee with the G.W.R. In 1950, Mr. Smith was one of a group studying road and rail costs which led to the formation of the Traffic Costing Organisation. He was appointed Assistant in the Costings Division, B.T.C., in 1951. When Traffic Costing Teams were established in the regions in 1952, he became a traffic costing officer at Paddington. Mr. Smith was appointed Senior Costings Officer, B.T.C. Headquarters in 1955, and was concerned with the preparation of the Commission's freight charges scheme and subsequently with the economics of the modernisation plan.

Mr. D. V. Ellison, Works Officer, British Transport Commission, Headquarters, has been appointed Assistant (Finance & General), General Manager's Office, Waterloo, Southern Region, British Railways, he succeeds Mr. F. P. B. Taylor.

Mr. L. Ingham, Manager, Industrial Sales Division, Chloride Batteries, Limited, has been appointed Assistant Sales Manager.

Mr. Frederick G. Liversedge has joined the Board of the Indian Iron & Steel Co. Ltd. in place of Mr. T. Leslie Martin, who has resigned.

Mr. H. Samuel has been appointed Senior Instructor (Operating), British Railways Staff College, Derby.

Mr. T. V. Woods has been appointed a director of the Rhondda Transport Co. Ltd. in place of Mr. A. F. R. Carling, who has resigned.

Mr. W. B. Sallitt, General Manager of the Nuclear Division of the Superheater Co., Ltd., has been appointed a special director.

Mr. C. A. Gordon, Assistant for Modernisation Works, Chief Civil Engineer's Department, Waterloo, Southern Region, British Railways, has been appointed District Engineer, Brighton, he succeeds Mr. J. Parker.

Mr. George May, Sales Manager of Robert Kearsley & Company, has retired after almost 40 years of service. He will be succeeded by Mr. Paul North, London Manager. To mark his retirement, Mr. May was presented with a camera, projector and accessories from the Sales Staff, and a picnic case and shooting-stick from the Factory, Laboratory and Office.

We refer elsewhere in this issue to the London Travel Committee set up by the Minister of Transport & Civil Aviation to take action in London's peak-hour transport problems. Mr. A. Samuels, Chairman of the London & Home Counties Traffic Advisory Committee, has been appointed Chairman. Other members are:—

Colonel A. E. Young, Commissioner of Police, City of London.

Mr. B. G. Arthur, Member of the Court of Common Council, City of London.

Mr. Richard Edmonds, Chairman, Town Planning Committee, L.C.C.

Dr. G. Charlesworth, Head of Traffic Section, Traffic & Safety Division, Road Research Laboratory, Department of Scientific Industrial Research.

The Rt. Hon. Lord Ebbisham, President of the London Chamber of Commerce.

Mr. J. Allen Birch, General Secretary, Union of Ship, Distributive & Allied Workers.

Mr. Frank Cousins, General Secretary, Transport & General Workers' Union.

Mr. S. F. Green, General Secretary, National Union of Railwaymen.

Mr. D. McKenna, Assistant General Manager, Southern Region, British Railways.

Mr. B. H. Harbour, Member of London Transport Executive.

Mr. R. Morton Mitchell, Chief Executive Officer and Secretary Road Haulage Association.

Mr. George Pollock, Member of the National Joint Advisory Council and the National Production Advisory Council on Industry.

Mr. Peter Cadbury, Chairman & Managing Director, Keith Prowse Co. Ltd. Miss Enid Hopper, Joint Managing Director, A. W. Gamage Limited.

Mr. L. G. Burleigh, Vice-Chairman, London Area Transport Users' Consultative Committee.

Mr. C. H. Wykes, Assistant Secretary, Ministry of Transport & Civil Aviation.

Mr. R. E. M. le Goy, Assistant Secretary, Ministry of Transport & Civil Aviation.

Mr. C. E. Hollinghurst, Divisional Road Engineer, Metropolitan Division, Ministry of Transport & Civil Aviation.

The Metropolitan Police have accepted an invitation to nominate an officer to serve on the committee.

**Mr. R. A. Slater**Appointed Stationmaster, Kings Cross,
Eastern Region

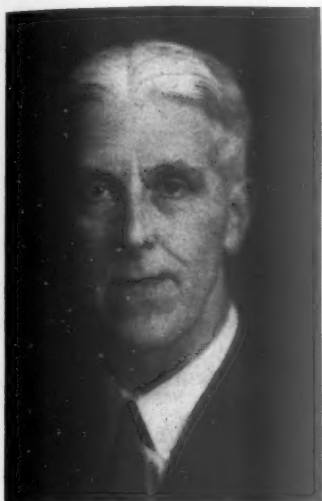
Mr. R. A. Slater, who, as recorded in our August 8 issue, has been appointed Stationmaster, Kings Cross, Eastern Region, British Railways, started his railway career as a porter at Wingate in 1937. After working at various stations as Porter and Signaller, Mr. Slater served as Stationmaster at Huthwaite Gate, Bolton Percy and Kirkham Abbey, during 1944 and 1945. In 1946 he joined the staff of the District Superintendent, York, as Relief Stationmaster, and two years later was appointed Chief Clerk in the Stationmasters' Office at York. He resumed Stationmaster's duties at Richmond, Yorkshire, in 1950 and at Durham the following year. From 1952 to 1955 he was Traffic Agent at Consett, and was appointed Stationmaster, Coventry, in 1955. He became Yard Master, Heaton, in 1957, the position he now vacates. Mr. Slater has served at various places as a Member of Chambers of Trade and has been Chairman of the Stationmasters' & Yard Masters' discussion group in Newcastle. He has also served as Secretary and Instructor to Mutual Improvement Classes. Aged 41, Mr. Slater is the youngest Stationmaster of any London main line terminus.

Mr. T. S. Dally has been appointed President, and Mr. C. A. F. Hastilow and Mr. B. J. Nicholson Vice-Presidents of the Society of British Paint Manufacturers Limited, for the year 1958-59. The vacancies on the Council have been filled by Mr. R. P. Chester, Mr. B. A. Shattock and Mr. C. H. Slade. Mr. F. A. Bignell has been re-appointed Hon. Treasurer.

Sir Richard Yeabbsley has been elected Chairman of the Ruberoid Co. Ltd., in succession to the late Mr. Davis L. Irwin.

Mr. R. Marshall is retiring from the board of Colvilles Limited owing to ill-health.

Philplug Products Limited has amalgamated with Expandite Limited. Mr. T. W. Greenwood remains Managing Director of the company. Mr. T. Pooley, Mr. A. Cathcart and Mr. C. R. Warr have been appointed directors of Philplug Limited.

**Mr. C. E. Lucette**

Manager & Secretary, Manchester Ship Canal Company, 1951-58

**Mr. D. K. Redford**

Appointed Manager & Secretary, Manchester Ship Canal Company

**Mr. W. G. Edmonds**

Appointed Manager, Manchester Ship Canal Company

Mr. C. E. Lucette, C.B.E., Manager & Secretary of the Manchester Ship Canal Company, who, as recorded in our October 31 issue, is retiring at the end of this year because of ill-health, joined the company in 1921. Mr. Lucette, who was educated at Cheltenham College and Keble College, Oxford, became Secretary of the Manchester Ship Canal Company early in 1949 and was appointed Manager & Secretary on January 1, 1951. He was awarded the M.B.E. in 1942 and the C.B.E. in 1955. Mr. Lucette is a member of the Central Advisory Water Committee and for the last two years has been Chairman of the Parliamentary & General Matters Sub-Committee of the Dock & Harbour Authorities Association.

Sir Leslie Rowan and Mr. R. P. H. Yapp, a Director of Vickers-Armstrongs Limited, have been appointed to the board of Vickers Limited.

Mr. Roger Knowles has been appointed Technical Representative for London and the South of England, for the Sheffield Twist Drill & Steel Co. Ltd.

Mr. W. Humble, Hawker Siddeley Group Regional Executive, Near East & Pakistan, has been appointed International Sales Manager for the Aviation Division. Mr. M. Clear, formerly Director in charge of exports, Brush Group, becomes International Sales Manager for the Industrial Division.

Mr. R. T. Richey, Manager, Motor Industry Division, Expandite Limited, is making a business tour of Belgium, Holland, Austria and Germany. He is accompanied by Mr. A. J. Orbell of the Company's Overseas Division who will be remaining in Germany some weeks.

Mr. J. N. B. Alexander and Mr. S. W. Kaye have been appointed Joint Managing Directors, Sales, Stewarts and Lloyds Limited as from January 1. Mr. J. C. Lloyd, the present Managing Director, Sales, will relinquish, owing to ill-health, all executive duties in the company and its subsidiaries from December 31. He will remain a member of the board.

Mr. D. K. Redford, LL.B., Deputy Secretary of the Manchester Ship Canal Company, who, as recorded in our October 31 issue, has been appointed Manager & Secretary, received his LL.B. degree at London University shortly before the 1939-45 war. He served with Bomber Command, R.A.F., and was five times mentioned in despatches. On demobilisation he transferred to the Reserve, with the rank of Wing Commander. Mr. Redford joined the Manchester Ship Canal Company in 1946, became Assistant Secretary in 1949, and Deputy Secretary in 1956. He will take up his new appointment in January.

Mr. J. C. Gale has been appointed to the board of Petters Limited, a member of the Hawker Siddeley Group.

Mr. W. D. C. Cormack, Publicity Manager, Thos. Cook & Son Ltd., has been re-elected, for the fifth term in succession, to the Council of the Advertising Association.

Mr. V. R. Prehn has been appointed Deputy Managing Director of Ruston & Hornsby Limited. Mr. E. R. Jones and Mr. C. T. Alderson become Assistant Managing Directors.

Mr. Brian Bromwich, Chief Press Officer, the General Electric Co. Ltd., has relinquished his appointment to take a position outside the company. Until a successor is appointed Mr. V. G. Burchill will act as Chief Press Officer.

Major-General E. P. Readman, who recently retired from the English Steel Corporation Limited, has joined the boards of the Darwins Group, Andrews Toledo Limited, the Sheffield Forge & Rolling Mills Co. Ltd., and the other subsidiaries of the group.

Mr. Allen L. Stock, Managing Director, the Morgan Crucible Co. Ltd., has been elected Chairman of the London Chamber of Commerce, in succession to Sir Harold Gillett. Mr. R. L. Willis has been elected Deputy-Chairman and Mr. F. H. Tate, Treasurer.

Mr. W. G. Edmonds, Traffic Manager, Manchester Ship Canal Company, who, as recorded in our October 31 issue, has been appointed the company's Manager, was educated at Merchant Taylors. Later Mr. Edmonds became a traffic apprentice on the L.N.E.R. He gained experience at various ports on the East coast, in particular at Hull, where he was Dock Superintendent. During the 1939-45 war he served with the Royal Engineers and commanded various Dock Formations in the U.K., India and Iraq. He was demobilised in 1945 in the rank of Lt.-Colonel. Mr. Edmonds joined the Manchester Ship Canal Company, as Assistant Traffic Manager, in 1947, became Deputy Traffic Manager in 1950 and Traffic Manager in 1951. He will take up his new appointment in January.

Colonel E. G. Angus, Chairman & Managing Director, George Angus & Co. Ltd., since 1933, is to retire as Managing Director on December 31, but will continue as Chairman. From January 1, 1959, Sir Walter J. Drummond will become an additional Deputy Chairman, the other is Mr. G. A. Sowerby; Mr. D. Drummond Angus becomes Managing Director, General Divisions; Mr. A. Procter becomes Managing Director, Engineering Divisions; Mr. D. E. F. Canney, a Director of George Angus & Co. Ltd. and Managing Director of Telamite Limited, becomes Chairman of that company, and Mr. C. L. G. Baker continues as Secretary & Financial Controller.

Mr. J. H. N. Thompson, Deputy Chairman and Joint Managing Director of John Thompson, Limited, and Mr. D. L. Murray, a director Secretary of that company, have been appointed to the boards of Thompson Brothers (Bilston), Limited, and Darham Industries, Limited.

Mr. V. L. Clare, Lighting Engineer, South-West Region, Philips Electrical Limited, has been appointed Area Lighting Manager, Bristol Branch Area.

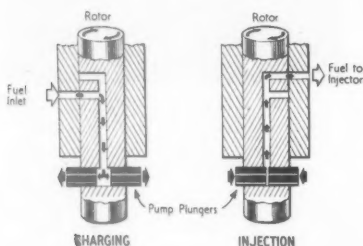
Mr. C. E. Drew has been appointed an overseas sales executive, Export Department, Steels Engineering Products Limited.

NEW EQUIPMENT AND PROCESSES

Diesel Injection Pumps

WITH a size range being developed to cover the smaller diesel engine powers used for railcars, the DPA distributor type fuel injection pump is in quantity production at the Rochester works of C.A.V. Limited.

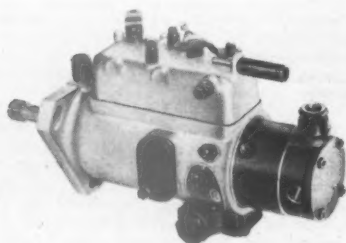
Two stages in the basic working principle are shown in the illustrations. A single cylinder with opposed roller-operated plungers, is mounted in a distribution rotor. A vane type transfer pump is incorporated to facilitate inlet metering of the fuel. No gears or highly stressed



springs are involved and, with close-speed-regulating mechanical or hydraulic governor, the pump forms an oil-tight unit.

Other advantages claimed are that the usual need to balance outputs between cylinders does not arise. The pump is suitable for operation in any position. The driving torque characteristics enable it to be flange-mounted and driven by a splined shaft in the simplest manner to reduce engine cost, weight and dimensions. The plungers, of small reciprocating mass, are returned hydraulically without springs, to suit high engine operating speeds. Non-return delivery valves are not necessary and nozzle dribble is prevented by the design of cam contours. Maximum fuel admission quantity to the plungers is set by a simple internal adjustment carried out during assembly.

A simple form of integral servo controlled, automatic injection timing advance and retard is available. The mechanism varies the position of the internal-cam ring which surrounds the plunger rollers. The makers claim that,



from the use of this feature, responding to both load and speed changes, engine torque curve improvements are possible. For example, the B.M.E.P. of a typical high-speed oil engine tested, is 105 lb./sq. in. at 2,000 r.p.m., 110 lb./sq. in. at 3,000 r.p.m. and 90 lb./sq. in. at 4,000

r.p.m., which gives a fairly flat torque curve. Also, with this automatic feature, engine idling can be quieter and smoother, cold-starting can be improved and a gain in economy of fuel consumption throughout the speed and load range claimed to be possible in certain circumstances when compared with a similar engine having an in-line fuel pump.

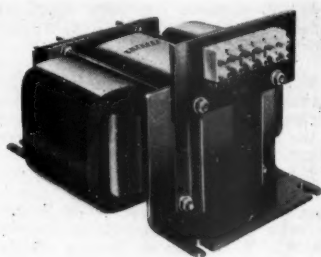
DPA pumps are not intended to replace conventional equipment on existing engines.

Further details, including prices and delivery, may be obtained from the manufacturer, C.A.V. Limited, Acton, London, W.3.

Stepless A.C. Power Controllers

FOR controlling a.c. circuits of high power such as those necessary in electric furnaces for the manufacture and heat-treatment of metal parts, saturable reactors have the important features of simplicity and long life. They benefit from the advantages inherent to amplifiers with saturable reactive elements when compared with electronic type amplifiers. Power controllers which employ saturable reactors handle a.c. power with smooth precision control.

Fundamentally, a saturable reactor is a form of transformer with one winding connected between an a.c. supply and a load, and with the power delivered to the load controlled by a small amount of d.c. power flowing in another winding. Saturation achieved by the d.c. power is made possible by the omission of any air gap in the transformer core so enabling the d.c. current to vary the a.c. permeability.



Much research work in this field has been carried out by Haddon Transformers Limited which produces stepless a.c. circuit controllers ranging up to 100 kVA. load capacity and, for use in cases where d.c. powers available are limited, magnetic amplifiers are included. A special non-linear device is applied where there is no d.c. power.

In addition to furnace control, typical applications are: servo mechanisms, a.c. voltage stabilisation, a.c. motors, control of air conditioning and heating systems, heavy-duty battery charging control, automation systems, plastic and plywood heating, signals control, computers and calculators.

The equipment under control is safeguarded as the method is purely electrical and there are no moving parts to develop mechanical faults. The amount

of d.c. power required, for example, is claimed to be as little as 20 W. to control the Haddon 10 kVA. saturable reactor output from three per cent to 91 per cent of its full a.c. load. Similar characteristics are shown by both the smaller and the larger models of the range which includes open and closed types processed to suit any climatic conditions.

Details, including price and delivery, may be obtained from the manufacturer, Haddon Transformers Limited, Masons Avenue, Wealdstone, Harrow, Middlesex.

Concrete and Mortar Additive

FROST protection for concrete and mortar in civil engineering work is claimed to be given by an additive, Barra Frost, intended to increase the rate of heat evolution and almost to halve the setting and curing times. Improved elasticity for working at low temperatures, anti-corrosive properties to reduce rusting of reinforcements, and an increase in ultimate strength by hardening, are stated to be further advantages of the additive, which allows of a reduction in the water to cement ratio.

Provided all normal precautions for cold-weather work are taken and fresh Portland or rapid-hardening cements are used, but not high alumina cements, Barra Frost gives protection down to 23° F. It is possible to gain protection for cement when working below 27° F., by using also heated gauging water, steam-heated aggregates, and richer mixes.

Further details, including price and delivery, may be obtained from the distributor, Expandite Limited, Chase Road, London, N.W.10.

Collapsible Containers

TOUGHENED aluminium containers, the Tracon, which can be returned empty, collapses to one fifth of the packed size, offer economies in goods traffic working, by reducing the requirement for empty wagons and road vehicles. They will convey a wide variety of freight, including fruit, chemicals, and machinery.

It is pilfer-proof, non-corrosive, with hardened steel corners. Locking clips are riveted to the metal structure to secure the collapsible sides and ends which are hinged along their entire length. Clips hold the sides in the collapsed position for the return journey.

Further savings claimed for the use of this type of unexpedient container, are that nailing and steel strapping are unnecessary and there are no loose sides or boards to get lost. Loading from the side is possible and plastic bags, both air and watertight are available for packing products that otherwise easily deteriorate. Lightweight cardboard or wooden shelves can be fitted into Tracon for fruit packing and, when required, perforations allow air circulation.

Two models are available with capacities of 4½ cu. ft. and 9 cu. ft. The tare weights are 30 lb. and 55 lb. respectively.

Further details, including price and delivery, may be obtained from Tracons Limited, Mowden Hall, Darlington, Co. Durham.

Ministry of Transport Accident Report

Funthams Lane Occupation Crossing, April 27, 1958: British Railways, Eastern Region

Colonel D. McMullen, Inspecting Officer of Railways, Ministry of Transport & Civil Aviation, inquired into the accident which occurred on Sunday, April 27, 1958, at Funthams Lane occupation crossing near Whittlesea, when the 11.20 a.m. down passenger train, March to Peterborough, consisting of four coaches drawn by a Class "B17" engine and running at about 50 m.p.h., wrecked a motorcar, killing its three occupants. The train stopped about 550 yd. beyond the crossing. It was able to proceed 55 min. later. Help was called without delay. It was fine, with a strong westerly wind.

Situation of Crossing

The crossing came into existence when the line was built under an Act of 1844. In this Act the road was referenced as an occupation one, and the owners or reputed owners were given as the "Surveyor of Highways and others," which suggests a public right-of-way for pedestrians—although that was not referenced; and this is confirmed by the existence of wicket gates. Besides the double line, which approaches from March on a falling gradient of 1 in 334, there are a siding and part of a connection from it crossing the roadway, which leaves the main Peterborough-Whittlesea road and gives access to two brickfields, two cottages, a farmhouse and a hostel. It is straight, narrow and generally level but near the crossing falls towards the tracks. There are two 16 ft. field type gates, opening away from the lines, 84 ft. apart. A signalbox, known as Kings Dyke, open continuously, controls gates over a public road alongside. It is 470 yd. on the March side of the occupation crossing and its down starting signal is 51 yd. in rear thereof.

Accidents occurred here in 1930, 1932, 1936 (when a lorry driver was killed), 1947, and 1957; and there have been a number of near misses. After the 1936 accident electrical indicators showing signs worded "line clear"—the normal indication—and "train coming—stop," were provided on each side of the line, so constructed that any failure would result in the "stop" indication appearing. (This type of indicator was described and illustrated in *The Railway Gazette* of May 6, 1938, on page 894.)

This indication is ordinarily produced when either the Kings Dyke down starting signal or the ground signal for the connection above mentioned is cleared, or in the case of the up line when a train reaches a track circuit 2,300 yd. away. The "line clear" indication becomes restored when the signals are replaced to "danger" or an up train actuates a treadle beyond the crossing. The indicators are illuminated and their condition and that of the lamps is repeated in the signalbox.

Warning Notices

On each side of the crossing there are no fewer than five notices. One prescribes that the far side gate shall be opened before the near one. Another warns the public not to cross unless the indicator shows "line clear" and that if the vehicle should stop on the line and be unable to move the "emergency plunger," provided on each indicator to ring an alarm bell in the signalbox, must be at once pressed. A third notice warns all concerned to be-

ware of the trains and look up and down the line before crossing. A fourth draws attention to the fact that the crossing is not a public one and may not be used by unauthorised persons. The fifth notice is the usual penalty one relating to failure to close the gates after using the crossing.

The report gives full details of their positions and the degree of visibility of the notices, indicators, the line, etc., also of vehicles approaching the crossing as seen by train drivers. As mentioned below, the car driver involved was visiting the neighbourhood and probably did not appreciate there was a crossing there at all until the last moment, as the gates had been left open.

A census taken since, shows that some 500 motor vehicles, 400 motor cycles or cycles, and 150 pedestrians pass over the line daily: there are about 90 trains a day. Road traffic is more or less continuous throughout the 24 hr. but heavier by day than at night; even on Sundays it is considerable. The majority of motor vehicles are heavy lorries, not the property of the brick companies, going to collect bricks. Notices on both sides of the crossing instruct train drivers to whistle; the one applying to down trains is 318 yd. away. Since the accident the police have placed two notices where the lane leaves the main road stating that it is private and not a through road.

Circumstances of the Accident

The train driver found all signals clear for him at Kings Dyke box; he and his fireman declared that the whistle was sounded as required, but it was not noticed by the signalman, by the guard, or by another guard riding as a passenger. When near the whistle board he saw the car approaching the crossing at normal speed and of course assumed it would stop at it but when a short distance away he saw it was being driven on the line. He said the south gate must have been open, or the car would have been obliged to stop and the train would have passed before the gate could have been opened. Evidence showed the north gate to have been open.

The signalman saw from his repeaters that the indicators at the crossing were operating correctly and two employees of one of the brick companies said they saw the north side indicator showing a train to be coming, immediately after the accident.

Conditions at Crossing

Other evidence showed that for a considerable time the gates had been consistently left open. The railway authorities had written about it on a number of occasions to the brick companies, and as late as January 29, 1958, and when Colonel McMullen visited the crossing to see the working of the indicators, with a view to assessing their suitability for use at another one, he found the gates open. Evidence showed the indicators to have worked always very satisfactorily; failures had been rare. Only one was on the danger side and occurred in exceptional circumstances. Steps were taken at once to eliminate possibility of a recurrence. Tests showed them to be working correctly after the accident.

The "stop" indication appears some considerable time before the arrival of a

train, varying from 3 min. for a fast one to some 8 min. for a slow, or longer if there are trains on both lines. Evidence regarding behaviour of road drivers was conflicting. The signalman, two engine drivers and a ganger said few took any notice of the "stop" indications and Colonel McMullen obtained the same impression from brick companies' representatives. The employees of one company, already mentioned, thought, however, that road drivers generally did obey the indicators.

Enginemmen regard the crossing as a dangerous one; they said they invariably sounded the whistle, some commencing to do so near the signalbox, others near the board.

Conclusions

The train driver was in no way responsible for the collision. Without doubt the crossing gates were open and the car was driven past the indicator showing the train to be approaching. Its driver was visiting Peterborough and seems to have driven round the country that Sunday morning and to have turned into the lane thinking it provided a short cut back. Probably he was unaware that it crossed the railway and quite possibly did not see the crossing itself until quite close to it. Presumably he did not notice the indicator. He could hardly have helped observing that there were notices on both sides of the road, but they would not have conveyed any message to him. Colonel McMullen is satisfied that the engine whistle was sounded but the car driver failed to hear it. The strong westerly wind would have carried the sound away from the crossing and on account of it probably the car windows were shut.

Recommendations

With the gates left open, as normally they are likely to be, a vehicle driver approaching from the south for the first time may well fail to appreciate that the road crosses an important railway until close to it. Discussions with the railway officers and between them and the brickfield proprietors resulted in alterations being put in hand, including a large conspicuous advance notice board, removal of the south side indicator to the left-hand side of the lane, re-wording some of the notices with concise messages which can be read easily, and re-siting some of the boards. The wording of the restricting indication on the electrical indicators is being changed to "Train coming—caution" replacing the order to stop—frequently disobeyed because of the lengthy period for which it must sometimes be shown—by a more realistic message to the road user of his responsibility for ensuring his own safety and that of trains before crossing the line.

Colonel McMullen thinks that consideration should be given to re-positioning the whistle boards nearer the crossing and instructing drivers to whistle over the whole distance. These alterations, with the notices placed by the police, above mentioned, should, he thinks, improve matters but should only be considered palliatives.

When the line was built the lane was presumably nothing more than a farm track. The building of brickfields early in this century, increased the road user although not materially. Most traffic at first was moved by rail. Its diversion to

the road and its later, and to some extent insidious, growth have made it hard to control. It is many times greater than anything ever contemplated for any occupation crossing and much in excess of that seen at a large number of public ones with attendants. Endeavours to get road users to keep the gates shut have succeeded only to a limited extent; sooner or later the practice of leaving them open has revived itself. With so much traffic and gates so far apart this is, Colonel McMullen thinks, inevitable. Even if the gates are kept shut accidents are liable to occur if the indicators are disobeyed; since his inquiry one has been only narrowly averted.

To appoint attendants would not, it is thought, improve matters to any great extent unless the gates were coupled, worked by a wheel and interlocked with the signals; this would be expensive, as attendance throughout the year would be necessary. With the present equipment it is unrealistic not to accept the fact that normally the gates will be left open and the situation must be regarded as analogous to that at "open" crossings with no gates.

Although legally an occupation one, the crossing is used so extensively and by many non-local persons that it may for practical purposes be looked on as a public and quite busy one. As a consequence of an official investigation, the results of which were embodied in a report to the Minister published in 1957, such "open" crossings were held to be suitable in certain circumstances but, Colonel McMullen emphasises, certainly not in a case such as this, even with road warning lights. While the indicators provided in 1936 have worked well it is clear that generally they are not obeyed, even by regular users of the crossing, and Colonel McMullen does not consider the situation will be safe, even with the improvements referred to, and that sooner or later there is likely to be another accident. As many road vehicles are heavy lorries, train derailment may result and if the contemplated diesel cars are introduced, so much lighter and more vulnerable, the danger becomes enhanced. It is essential therefore to take further remedial measures.

The closing of Funtams Lane has been considered but found impracticable, while a suggestion to control the occupation crossing gates from Kings Dyke signalbox was rejected on account of the danger of vehicles becoming trapped between them.

After due consideration, Colonel McMullen believes that, apart from continuous manning with gates and signals interlocked, the only satisfactory method of protecting this crossing is by automatic half-barriers, the use of which has been covered by provisional requirements issued by the Minister in 1958; but this would not comply with the law at this location because the British Transport Commission's Act of 1957 authorised such an arrangement only at public crossings. The Commission is therefore recommended to seek special powers from Parliament and, if they are obtained, to install it here as soon as possible.

TUNNEL FOR TRAVOLATOR AT BANK STATION COMPLETED.—The 300 ft. tunnel which will carry the twin-track travolator to connect the Bank platforms of the Waterloo & City line British Railways, Southern Region, with the London Transport station is nearly complete. The 16½ ft. wide cast-iron-lined tunnel alongside the existing subway has been driven, but it will be some months before the travolator tracks and machinery can be installed. A new ticket hall will be built just under the roadway with a subway to Poultry.

Initial Run of First A.C. Locomotive in Britain

Converted gas-turbine locomotive for staff training and equipment testing

The first 50-cycle a.c. electric locomotive in Britain made its initial run with a passenger train in the London Midland Region of British Railways on November 26. It has been produced to the order of British Railways by converting the experimental gas turbine locomotive built by Metropolitan-Vickers Electrical Co. Ltd., for operation in the Western Region. Conversion was carried out at the Stockton works of Metropolitan-Vickers—Beyer Peacock Limited.

The locomotive operated over the Styal line, 9½ route-miles between Wilmslow and Mauldeth Road, the first portion of the London Midland Region main line to be electrified at 25 kV, 50 cycles a.c.

Training and Equipment Testing

The initial function of the locomotive is the advance training of the drivers required for the Bo-Bo type "A" a.c. locomotives now being built, and the testing of overhead equipment. Although it will be some time before there are public services on this line, the locomotive will be used for testing purposes with passenger and goods trains. It is equipped with a dual voltage transformer so that it can operate on both 25 kV, and 6.25 kV, systems, although the Styal line will operate at 25 kV, only.

During conversion of the locomotive, four of the six traction motors and their auxiliary equipment were retained making a A1A-A1A wheel arrangement. The majority of conversion equipment is of Metropolitan-Vickers manufacture. British Railways provided the Stone-Faiveley pantograph and the Brown-Boveri air blast circuit breaker. The main rectifier is of the Hackbridge & Hewitt glass bulb type.

The principal components, except the traction motors and rectifier, are identical

to those being made for the Bo-Bo locomotives for the Euston-Manchester-Liverpool electrification.

Transformer Equipment

The main transformer equipment consists of two transformers in one tank; an auto transformer with 38 taps to feed a step-down transformer, which in turn supplies the main rectifiers. The h.t. tap changing unit and control gear are built on to the side of the transformer tank. The tap changer is immersed in oil to reduce the clearances required.

The transformer incorporates a voltage change-over switch, which alters the supply tapping on the auto transformer to correspond with the main incoming voltage at either 25 kV, or 6.25 kV. The change-over switch is automatically controlled by an automatic power control system (A.P.C.) which consists of a track magnet, a receiver on the bogie of the locomotive, and a line voltage transformer which feeds a number of voltage selecting relays.

The mercury arc rectifiers consist of 16 four-anode glass bulbs connected in bi-phase to provide the supply to the traction motors. A smoothing choke is connected between each traction motor and the main rectifier to limit the ripple current delivered to the motor.

Regular passenger services between Crewe and Manchester will start in 1960. By 1963 they will be extended to Birmingham and Liverpool, and by 1968 there will be through electric services between Euston and Manchester and Liverpool via Birmingham.

All the equipment for a.c. electrification, both on rolling stock and at fixed installations, has been designed and manufactured to the requirements of Mr. S. B. Warder, Chief Electrical Engineer, British Railways Central Staff.



First a.c. electric locomotive in Britain, a converted Metropolitan-Vickers gas turbine locomotive, making its initial run with a passenger train over the Styal line

I.R.S.E. Visit to L.T.E. Programme Machines

The autumn technical visit of the Institution of Railway Signal Engineers was held on November 29 when, by permission of the London Transport Executive, programme machine installations on the Northern Line were inspected. The party, led by the President, Mr. J. F. H. Tyler, was received by the Signal Engineer, Mr. R. Dell, Past President and Member of Council, who was accompanied by members of his staff. Others present included Mr. D. G. Shipp and Mr. W. Owen, Vice-Presidents; Messrs. E. G. Brentnall and T. S. Lascelles, Past Presidents; several Members of Council, and Mr. V. H. Smith, Hon. Secretary of the General Purposes Committee.

Members visited the Control Room at Leicester Square Station with the adjoining automatic telephone exchange and the programme machine installations at Camden Town, Euston and Kennington, including the relay rooms with associated interlocking machines, train describing and other equipment.

The work on the Northern Line is in due course to be extended to include Finchley Central, which will bring the entire central part of the route under programme machine operation. Intervention by the Control Room staff will be required only in emergencies.

Mr. Tyler presided at luncheon at the L.T.E. Dining Club at South Kensington. After the Loyal Toast he expressed the thanks of members to L.T.E. for the facilities afforded, and to Mr. Dell and his staff for the manner in which they had organised the inspections. He then reviewed the progress effected on the Underground lines since the first tubes were operated under manual signalling, eventually displaced by automatic operation. He dwelt specially on the prominent part played in this by Mr. Dell, as seen in the development of route-lever working, remote control, speed control, and finally the programme machine equipment.

Wherever automatic working could replace the human element, he stated, that was being done on the L.T.E. lines, which were carrying the densest traffic of its class

in the world in absolute safety. For some years Mr. Dell had been responsible for the developments involved and, from personal experience, he recommended any young man who had an opportunity of serving in his department to avail himself of it; he would find it a splendid training ground. Continuing, the President thanked Mr. V. H. Smith for the excellent way in which, from the Institution's side, the visit had been organised.

Mr. Dell, in reply, expressed his Executive's appreciation of the Institution visit. He admitted that he himself might have provided the inspiration leading to the evolution of the programme machine system but it had been made practical reality by much hard work by those serving under him. They had learned much from the working of the apparatus on the Northern Line, which they would turn to advantage in due course.

No further programme machine installations were planned for 1959, but 1960 would see some. They were planning certain other developments in connection with the automatic direction of movements in stabling sidings.

Power-Operated Signalbox in Service at Huddersfield

A new power-operated signalbox was brought into use at Huddersfield, British Railways, North Eastern Region, during the weekend of November 29-30.

Colour-light signals, with position-light subsidiary signals for shunting purposes, track circuits, and electrically operated points have been installed throughout the station area.

The new box is situated between Platforms 4 and 8. It replaces the two existing mechanically-worked boxes known as Huddersfield Nos. 1 and 2 in which were 226 manually-operated levers. It is a two-storey building of brick and reinforced concrete. The brickwork is designed to blend with the stonework of the existing station buildings. The upper floor consists mainly of hardwood curtain walling with grey glass infill panels.

The control room is on the upper floor.

On the lower are the relay room and electrical equipment. The colour-light signals, subsidiary signals and electrically-operated points are worked individually by 114 switches from a console in the control room. Altogether 169 different routes can be set up. Above the control console is the illuminated diagram.

Emergency Supply

In the event of failure of the normal power supply, an emergency supply is automatically provided from a stand-by diesel-driven alternator.

The signalling work has been carried out to the requirements of Mr. A. F. Wigram, Signal Engineer, North Eastern Region, by the Siemens & General Electric Railway Signal Co. Ltd. The box, designed by the Architect's Office of the Chief Civil Engineer's Department, North Eastern Region, has been constructed by F. & J. Watkinson, of Bradford.

Parliamentary Notes

Problem of Transport in Rural Areas

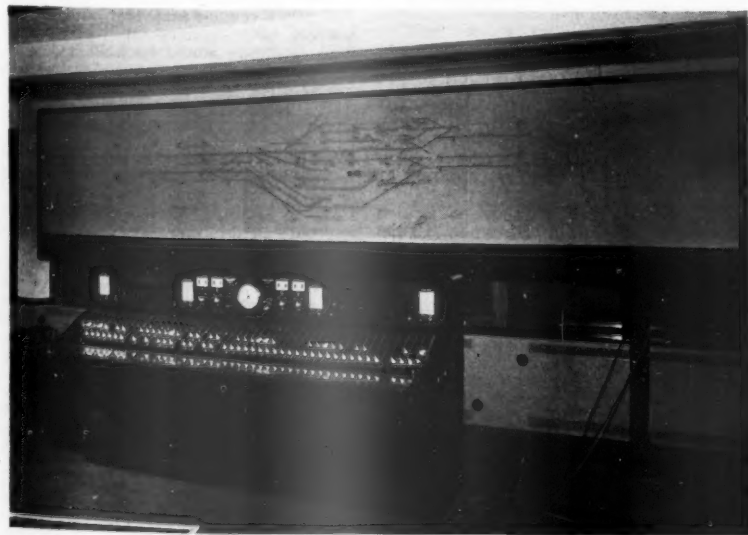
Mr. Will Owen (Morpeth—Lab.) raised, on the adjournment of the House of Commons on November 19, the question of the "lamentable deterioration in rural transport." He said that from 1951 there were passenger train services from Morpeth to Scots Gap, from Hexham to Bellingham and on to Scotland. These services had now been withdrawn. The railway lines were still there, but Government policy was so wrapped up in the creed of profitability that they refused to recognise their responsibility to provide a public service. When the train services were withdrawn, a strong delegation complained to the Minister, but no action was taken. At that time there existed more or less adequate bus services. In some respects it was subsidised by the B.T.C., but now many of these services had ceased to operate.

Mr. Rupert Speir (Hexham—C.) said no one disputed the seriousness of the critical situation developing in Northumberland. Quite rightly, British Railways were closing down the uneconomic branch lines. They were doing so right and left. At the same time the buses were disappearing, and the rural communities were simply becoming isolated. There were plenty of possible solutions to the problem, but it was high time the Government faced it directly.

Mr. Ernest Davies (Enfield E.—Lab.) said that if alternative facilities to trains were provided there should be an undertaking that they would continue and would not be subsequently withdrawn, because branch lines could not be reopened easily, and there was no possibility or likelihood of their being reopened.

Mr. Ernest Popplewell (Newcastle-upon-Tyne W.—Lab.) said that the Commission, when faced with difficulties, in its desire to try and do something, had agreed for a limited period to pour a subsidy into a local bus undertaking. "We know that that is not the answer," he said. "The B.T.C. cannot be expected to do it. We all know the difficulties which it faces. With the terrible deficit which it is now running into, and which it has to borrow additional cash to meet, it cannot help in this way much longer."

Mr. Popplewell therefore urged the Minister to get his Department—as distinct from the traffic commissioners who could not do anything—to apply its mind particularly to the question of rural transport.



Console and indicator diagram in new power-operated signalbox at Huddersfield, North Eastern Region

Mr. G. R. H. Nugent, Joint Parliamentary Secretary to the Ministry of Transport & Civil Aviation, accepted that there was a problem, and that it was the duty of the Government to do all they could to ameliorate the difficulty, "but I do not accept that it is the responsibility of Government to lay on a social services subsidised by public funds to provide transport."

"That has never been our policy, and it will not be now. If it is the policy of hon. Members opposite, I hope that they will get up and say so, but that was virtually what was advocated to me. In the national picture we have done a great deal to keep these transport services going. It is to a large extent a matter for local adjustment to do it. The typical picture was not one of a number of small companies covering a rural area, but of large operators operating in urban and rural areas together and carrying their loss-making rural services on the profit-making urban services. The special responsibility of the Ministry's traffic commissioners had been throughout just to encourage that to happen. A great deal was being done, he agreed not very spectacularly, but very effectively to keep these services going."

Questions in Parliament

Unpunctuality of Trains

Captain Pilkington (Poole—C.) asked the Minister of Transport & Civil Aviation on November 5 whether, in view of the frequent unpunctuality of trains, he would give a special direction to the B.T.C. to revise its railway schedules.

Mr. Watkinson: Unpunctuality is due to many variable causes. The problem is a matter of management for the B.T.C., but I know that where train times become unrealistic owing, for example, to major engineering works under the modernisation plan, the schedules are reviewed, and in this winter's timetables a number of expresses have, in fact, been re-timed. Friend has in mind other trains, which ought to be re-timed in this way, I am quite willing to bring them to the attention of the Commission.

Captain Pilkington: I have many such examples. There are many complaints under this heading. It is time that British Railways took that same pride in punctuality to which we were used before the war, under private enterprise.

Mr. J. Harrison (Nottingham E.—Lab.): In general, has the Minister any evidence regarding the improvement in the punctuality of these trains over the past five or six years? Is not it on record that there has been a substantial improvement in punctuality?

Mr. Watkinson: I think that it depends on the trains. The modern diesel trains keep very good times, but I am afraid that some of the older steam trains are not so good.

Railway Relief Staff Risks

Mr. David Jones (The Hartlepoons—Lab.) asked the Minister of Pensions & National Insurance on November 17 whether, in the light of recent decisions concerning relief staff on the railway and the peculiarities of the terms of their employment in relation to their risks of injury by accident whilst travelling on the highway to their temporary places of employment, he would consider revising the regulations relating to eligibility to benefit under the Industrial Injury Acts.

Mr. John Boyd-Carpenter: This is a matter not of regulations, but of express

provisions of the Industrial Injuries Acts. These provisions are now well settled, and I have no proposals for legislation to amend them.

Mr. Jones: It is a question of the interpretation of the Act. This class of person—railway relief staff—frequently has to travel long distances over the highway to carry out the instructions of his employer. A recent case was that of a relief crossing keeper at Hastings, ordered to relieve at Rye, starting at 6 a.m., for which he was allowed 2½ hrs. walking time. His only means of getting there was either to walk or cycle. He cycled to his job, lost his life in the process, and his widow has now been denied industrial injury benefit.

Mr. Boyd-Carpenter: This is a matter of interpretation. Parliament in its wisdom has placed that interpretation in the hands of the statutory authorities. The case was considered and decided by the Commissioner himself. The fact that journeys to places of work are not generally covered—apart from the question of employers' transport—is a long-standing provision going right back to the time of the old Workmen's Compensation Acts.

Mr. E. Popplewell: There is the special problem of people who have no fixed point at which they commence work, but who have to travel long distances.

Mr. Boyd-Carpenter: This problem of people with varying places of work is not confined to railwaymen, but arises in other occupations. The matter is one which was considered earlier by the courts, and has now been dealt with by the statutory authorities over a good many years.

Welsh Railway Modernisation claims

Mr. R. Gower (Barry—C.) asked the Minister of Transport & Civil Aviation on November 19 if, in his re-examination of the money to be made available for the B.T.C. he would give careful consideration to an increase in the modernisation programme of British Railways in Wales to accord with Government policy of giving special assistance to areas in Wales where unemployment was above the average for the U.K. as a whole.

Mr. Watkinson, in a written answer: Additional capital investment has already been authorised for British Railways in 1959. Full weight is given to the needs of Wales, as of other parts of Great Britain, for an efficient and economic railway system.

Western Region Accident

Mr. Francis Noel-Baker (Swindon—Lab.) asked the Minister of Transport & Civil Aviation on November 18 for a statement about the recent railway accident in the Western Region near Swindon; and what delays were caused by it.

Mr. Harold Watkinson, in a written answer: At 2.5 a.m. on November 12 the 12.1 a.m. freight train from Bristol to Reading, which had been working in Swindon yard, passed at danger the semaphore starting signal leading from the up goods loop to the up main line, at Highworth Junction, Swindon, and became derailed at the catch points. Some of the eight derailed wagons obstructed the up main line on which an express freight train from Fishguard to Paddington was closely approaching, and the engine of this train was derailed. It pushed some of the wagons of the first train foul of the down main line on which the 12.45 a.m. Paddington to Carmarthen newspaper train was also approaching under clear signals at the time, and the engine of this train was partially derailed. Both the running lines and the loops were blocked and the permanent

way was damaged. No one was injured.

The work of clearance and repair began promptly and the down main line was opened for traffic just before 11 a.m.; the up main line was opened at 3 p.m. Because of the obstruction of this important route to Bristol and South Wales many passenger trains were delayed or cancelled, 35 altogether being affected. A number were diverted: some were terminated short of the site, special bus services being provided to reduce inconvenience to passengers; and a few were cancelled. The relocation to freight traffic was serious, 62 trains being either cancelled or delayed.

The main lines are equipped with the Western Region type of A.T.C., but the signals were "off" in both directions for the express freight trains at the time when the initial derailment took place, and the trains had passed them before they could be put back. The goods loop line is not equipped with the A.T.C. apparatus which is only applied to passenger-running lines.

The railway inquiry into this accident was held on November 13; it is not proposed to hold a Ministry Inquiry, but the circumstances will be fully investigated by the Chief Inspecting Officer.

Staff and Labour Matters

London Transport Bus Services

At a meeting between representatives of the London Transport Executive and the busmen's representatives on December 1, the Executive rejected a request by the busmen's representatives that standing passengers should no longer be allowed on buses and Green Line coaches.

The representatives of London Transport pointed out that a large proportion of the passengers carried on the buses and coaches travel during short peak periods and if standing passengers were not allowed even more buses and coaches would have to be run in the peak hours. This would be wholly uneconomic and cause unnecessary congestion of traffic.

The times at which standing passengers were carried were already restricted and to abolish the arrangement or reduce the number of standing passengers permitted would be against the public interest.

One argument put forward in support of the men's request was that standing passengers made conductors' work difficult. This condition would be worsened by the overcrowding which the union contends has resulted from recent cuts in services.

NEW CONTROL FOR FORMER G.C.R. LINE INTO LONDON.—The train services from and to Marylebone, which have been operated by the London Midland Region since February of this year, are to be controlled in future from a new central control office built on the second floor of the offices at Marylebone Station. The new control will be responsible for operation between Marylebone and Northolt Junction East on the High Wycombe line and on the main line between Aylesbury and Culworth.

DIESEL ENGINEERS & USERS ASSOCIATION.

—A general meeting of the Association will be held at the Memorial Building, The Institute of Marine Engineers, 76, Mark Lane, E.C.3, on December 18, at 2.30 p.m., when the "Report on heavy oil engine working costs and performance, 1957-58" will be presented. "Operating problems," and the paper "Modern trends in high-speed diesel engines," by L. D. E. Brodie, will be discussed.

Contracts and Tenders

South African Railways contracts: diesel locomotives for the Silverton Tramway Co. Ltd.

South African Railways has placed the following contracts:—

Reunert of Lenz Limited, Johannesburg: 1,500 wagon sets of carcast bogie components, value £69,797

Steel Wheel & Axle (S.A.) Pty. Ltd., Johannesburg: 120 wheel sets, wheels, and axles, value £12,423

Sturrock (S.A.) Limited, Johannesburg: 4,019 wagon sets of friction draw-gear, value £216,172

Wright Boag & Head Wrightson (Pty.) Ltd.: 30 special type wagons, value £34,813

Scaw Metals Limited, Johannesburg: 1,000 wagon sets and 4,000 sets of auto couplers, value £436,000

Standard Brass, Iron, & Steel Foundries Limited, Benoni: 1,250 wagon sets of carcast bogie components, value £397,297

Benoni Engineering Works & Steel Foundry (Pty.) Ltd., Benoni: 3,030 wagon sets of carcast bogie components, value £256,215

Gregg Car Co. (S.A.) Pty. Ltd., Johannesburg: 1,530 wagon sets of carcast bogie components, value £61,363

Reunert & Lenz Limited, A. M. Burgan (Pty.) Ltd., M. Wegener & Co. (Pty.) Ltd., and the British Thomson-Houston Co. S.A. (Pty.) Ltd.: sub-station equipment, value £9,168; £770,556; £639,700; and £21,936 respectively.

Silverton Transport & General Industries Limited, Melbourne, has placed a contract with Tulloch Limited, Sydney, for four 650-h.p. diesel-hydraulic locomotives, to replace existing steam power. They will be generally similar to those recently ordered by the Victorian Railways, and powered by a Mercedes Benz diesel engine coupled to a Krupp hydraulic transmission system incorporating a torque converter with infinitely variable blades. To meet the requirements of the Silverton Tramway the locomotives will be carried on eight coupled driving wheels, reducing the axle loading to 12 ton as compared with the 16 ton of the Victorian Railways units.

Talbot Waggonfabrik, Aachen, Germany, has received a contract from the Crown Agents for 50 steel bogie covered goods wagons for the Nigerian Railway Corporation.

The British Transport Commission has placed an order with Thomas Smith & Sons (Rodley) Ltd., Rodley, Leeds, for six level-luffing electrically-operated portal cranes for use at Bentinck Dock, Kings Lynn. The cranes will normally operate at a maximum load of 4 tons, but two of them will be capable of lifting single loads, such as containers or machinery, weighing up to 7½ tons. All six cranes will be equipped for the discharge of bulk dry cargoes by grab.

British Railways, Eastern Region, has placed the following contracts:—

The Concrete Development Co. Ltd.: supply and delivery of five precast concrete footbridges in connection with the Chingford, Enfield, Hertford East and Bishops Stortford electrification

Trollope & Colls Limited: construction of carriage washing and flushing apron, filter tanks, ancillary buildings,

services, and concrete retaining wall for electric multiple-unit stock inspection and cleaning depot at East Ham

J. Dixon (Doncaster) Limited: construction of two staff accommodation buildings, with short connecting canopy, at Beighton.

British Railways, North Eastern Region, has placed the following contracts:—

Brightside Heating & Engineering Co., Ltd.: heating installation, Percy Main Motive Power Depot

Ridghouse, Limited, erection of structural cover over coal stage

Ernest Hunter (Scarborough), Limited: new signalbox, Rillington

Metropolitan-Vickers Electric Co., Ltd.: chain welding and normalising equipment, Darlington Locomotive Works.

British Railways, Southern Region, has placed the following contracts:—

Oxley & Bennett Limited: new platform roofing and drainage, Newhaven Harbour

W. H. Gaze & Sons Ltd.: new car park, Egham and Cobham

Maurice Hill Limited: re-roofing of engine shed, Eastleigh Motive Power Depot

Burton Constructional Engineering Co. Ltd.: fabricated steelwork for new platform roofing, Victoria

Maurice Hill Limited: renovations, Totton Station

Durable Asphalte Co. Ltd.: asphalt-ing of station roofs, Malden Manor and Tolworth

Mould & Blaydon Limited: installation of heating and hot water services, Newhaven Town Station.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From India:

10 items of signal equipment including ladders, brackets, and bases.

The issuing authority is the Director General of Supplies & Disposals. The tender No. is WP2/4446/3/C. Bids should be sent to the Director General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is December 16, 1958. The Board of Trade reference is ESB/29114/58.

From South Africa:

16 items of carriage fittings, including door handles, springs, brackets, suspension links, hose pipe connections, and buffer washers.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. PRR62: Carriage Settings" should be addressed to the Stores Superintendent, South African Railways, Pretoria. The closing date is December 18, 1958. Local representation is essential. The Board of Trade reference is ESB/29493/58.

From Korea:

1 electric generating set, 150-kW., four wire, 60 cycle, 240/120 V., water-cooled diesel engine and spare parts

Lighting equipments and fittings including tumbler switches, insulated

copper wire, oil-filled transformers, and fluorescent fixtures

5 steel locomotive-type boilers

Public address system unit.

The issuing authority and address to which bids should be sent is the Office of Supply, Government of the Republic of Korea, Seoul, Korea. The tender No. is 388-R. This purchase will be financed by the International Co-operation Administration (I.C.A.) the agency through which the United States Government gives economic and technical assistance to other countries. The closing date is January 16, 1959. The Board of Trade reference is ESB/29137/58/ICA.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Laccon House, Theobalds Road, W.C.1).

The Board of Trade has been advised that South African Railways will shortly be issuing tender documents for the supply and delivery of bogie ballast wagons, type "Y-7," centre and side discharge. The closing date for the tender will be February 20, 1959. Tender documents and drawing will be purchasable a £50 and £10 a set respectively for the initial supply, and £25 and £10 a set in the case of subsequent supplies. The Board of Trade reference is ESB/29206/58.

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the tender for broad-gauge main-line diesel units from Pakistan, recorded in our October 10 issue, has been amended. An alternative quotation is now required for 31 main-line diesel locomotives. The Board of Trade reference is ESB/24221/58.

USE OF STRIKE WEAPON IN EAST AFRICA.—

The London Transport bus strike of last summer was described as a "hollow victory" by Mr. J. R. Farquharson, General Manager of East Africa Railways & Harbours, in a recent speech to the annual conference of the Railway African Union. Referring to pending changes in legislation in Kenya which will allow the union to declare a strike after appropriate notice, he gave a warning about indiscriminate use of the new powers. There was probably a feeling among union members, he stated, that they now had full opportunity to coerce the management into any particular course of action. He must warn them that the strike weapon must be used with the greatest of discretion in the interests of their own members. Some union leaders had claimed the recent bus strike in London as a victory for the union. If anyone looked at the facts they would find that it was a hollow victory. Not only did the men lose their pay during the lengthy strike but bus travellers had now made other arrangements for transport and the total volume of business has fallen, so that the number of drivers to be employed in future will be less than formerly. That was exactly what is likely to happen in East Africa if strikes were declared in support of claims which there was no possibility of the management meeting.

Notes and News

Institution of Locomotive Engineers, Annual Luncheon Change of Date.—The 1959 annual luncheon of the Institution of Locomotive Engineers will be held at the Dorchester Hotel, Park Lane, London, W.1, on Friday, February 27, and not on March 6, as shown in the syllabus card.

New Building for Superheater Co. Ltd.—On November 27, the Superheater Co. Ltd. held a cocktail party to introduce business associates to the company's new offices at 97, Tottenham Court Road, London, W.1. The total area of the offices, which accommodate 170 staff, is 22,500 sq. ft. A well-equipped drawing office (see illustration on this page) is included in the building, which houses all the company's departments under one roof.

"Berkeley Square."—To celebrate its 25th anniversary the London Midland Dramatic Society (now named Euston Players) presented "Berkeley Square," a play in three acts by John L. Balderston (in collaboration with J. C. Squire), at the Rudolf Steiner Theatre, Baker Street, N.W.1, on November 20, 21 and 22. An excellent all-round performance was given by a cast which included Richard Rayment as Tom Pettigrew, Rosalind Adkins as Miss Pettigrew, Margaret Kirby as the Lady Anne Pettigrew, Richard King as Mr. Thostle, Zoë Georgiou (a young and very capable newcomer to the cast) as Helen Pettigrew, Raymond Walker as the ambassador, and Frank Kavanagh as Peter Standish. The play was produced by David Askey. The next production of the Society will be "Pink Champagne" at the Scala Theatre, London, W.1, on May 7, 8 and 9, 1959.

One-Piece Cast-Steel Bogie Awarded Diploma of Honour at Brussels Exhibition.—The "Commonwealth" type one-piece cast-steel bogie which English Steel Castings Corporation Limited, Sheffield, loaned to the British Iron & Steel Federation for display on its stand at the Universal & International Exhibition, held in Brussels, has been awarded a diploma of honour in 20/3 (steel and iron foundry work). The bogie was of a type supplied by English Steel Castings Corporation Limited to the English Electric Co. Ltd. for a batch of 750-h.p. diesel-electric locomotives delivered to New Zealand Government Railways. It is 16 ft. 9 in. long, 7 ft. 2 in. wide, and weighs some 2½ tons.



Six-wheel "Commonwealth" type cast steel bogie, manufactured by English Steel Casting Corporation Limited, awarded diploma of honour at Brussels Exhibition



The drawing office of the new building of the Superheater Co. Ltd. in Tottenham Court Road, London, W.1

It will again be on display between May 29 and June 14, 1959, at the British Trade Fair in Lisbon.

Fire After Japanese Level Crossing Accident.—Three people were killed and 26 injured on Monday when an electric train collided at a level crossing near Tokyo with a three-wheel motor cycle loaded with oil causing a fire which burnt out two coaches.

The Railway Club.—The annual dinner of the Railway Club was held at the Danish Club, London, on November 28. The President of the club, Mr. T. S. Lascelles, was in the chair, supported by Mr. Charles E. Lee and Mr. H. A. Vallance, Vice-Presidents; Mr. B. D. J. Walsh, Hon. Secretary; and Mr. A. Roose, Hon. Treasurer. The guest of honour was Mr. R. F. Hanks, Chairman, Western Area Board, British Transport Commission. Others present among the record attendance of 71 included Mr. C. J. Rider, Public Relations & Publicity Officer, British Railways, Western Region, and

Mr. L. C. Johnson, Archivist, B.T.C. An apology for absence was received from Mr. D. S. M. Barrie, a Vice-President of the club. The toast of the club was proposed by the President. The toast of the officers and committee was proposed by Mr. C. F. Wells. Mr. J. E. Norris replied. The toast of the guests was proposed by Mr. Lambert H. Bailey, and Mr. R. F. Hanks replied.

The Society of Engineers Change of Address.—The Society of Engineers is moving its offices, and from December 15, its address will be Abbey House, Victoria Street, Westminster, London, S.W.1. The telephone number, Abbey 7244 will remain unchanged.

Amalgamation of Leeds Central and City Stations.—A scheme to amalgamate Leeds City and Leeds Central Stations is to be considered by the British Transport Commission. Sir Brian Robertson, Chairman of the Commission, announcing this in Leeds last week, said that he thought there was an overwhelming case for amalgamation of the two stations. If the scheme is approved it will take three years to complete.

London Transport Dramatic Club.—On November 24 and 25 the London Transport Dramatic Club presented "Here We Come Gathering," a comedy in three acts by Philip King and Anthony Armstrong, at the King George's Hall, Great Russell Street, W.C.1. The action of the play passes in the unfurnished living-room of a newly acquired cottage in the country, is very amusing and well acted by every member of the cast. It was produced by Gladys Burchell.

British Railways Cross-Channel Car Ferry Launched.—The largest cross-channel drive-on drive-off car ferry yet built for British Railways, the *Maid of Kent*, was launched by William Denny & Bros. Ltd. at Dumbarton on November 27. The naming ceremony was performed by Mrs. C. P. Hopkins, wife of the General Manager of the Southern Region of British Railways. The ship, intended for the Dover-

Boulogne service, will accommodate 180 motorcars, up to 30 motorcycles, and carry motor coaches as well as 1,000 passengers. It has two continuous decks, with an extra garage deck, and a cruiser-type stern to suit the ramps at Dover, Calais, and Boulogne.

B.I.C.C. Carlisle Branch Office Change of Address.—The Carlisle Branch Office of British Insulated Callender's Cables Limited has moved to Durranhill Industrial Estate, Harraby, Carlisle. The telephone number, Carlisle 22221, remains unchanged.

British Transport Commission Passenger Charges Scheme, 1958.—The public inquiry into the draft passenger charges scheme submitted by the B.T.C. for confirmation by the Transport Tribunal under the Transport Act, 1947, as amended by the Transport Act, 1953, will be held at the Niblett Hall, 3 (North), Kings Bench Walk, London, E.C.4, on December 18, starting at 10.30 a.m.

Temporary Withdrawal of Pullmans in Southern Region.—Certain Pullman cars normally running in London-Brighton-Littlehampton multiple-unit electric trains of British Railways, Southern Region, are stated to be under repair. They have accordingly been withdrawn as a temporary measure from the sets in which they are included. In some cases buffet cars have been substituted. It is hoped to provide normal Pullman facilities once more in a month or two.

Opening of B.T.C. Freight Transport Exhibition.—On page 578 of our November 7 issue the names of those who accepted invitations to be present at the opening of the British Railways and British Road Services freight transport exhibition at Battersea Wharf Depot included that of Mr. C. H. Cuttriss, who was incorrectly described as Managing Director of W. C. Youngman & Co. Ltd. The correct name of the company is W. C. Youngman Limited. Mr. W. C. Youngman is Managing Director and Mr. C. H. Cuttriss Director and Secretary.

Long Girders Moved by Rail in the North Eastern Region.—Two large girders, each 112 ft. long and 36 ton in weight, were moved by rail recently from Dorman Long Limited Britannia Works, Middlesbrough, to its new universal beam mill at Lackenby Steelworks, Grangetown. The girders were constructed in such a way that they could only be carried suspended

between their two extremities and two special girder wagons were used, producing a distance of 109 ft. between the bogie centres. Special stools designed by British Railways, North Eastern Region, railway loading inspectors in co-operation with Dorman Long staff were used. The bearing plates at each end of the girders rested on the stools which in turn were mounted on the turntables of the girder wagons. The clearance between the girder and the wagon had to be kept to a minimum to keep the top of the girder within the loading gauge.

L.M. Region Operating Organisation in Derby.—A further stage in the development of the traffic organisation of British Railways, London Midland Region, was reached on November 30. From that day the lines controlled by the District Operating Superintendents at Nottingham Midland (former M.R. and later L.M.S.R.) and Nottingham Victoria (former G.C.R. and G.N.R. and later L.N.E.R.) came under a single administration, apart from some outlying sections of the Victoria district, which has been taken over by the District Operating Superintendents at Leicester and Derby.

Heavy Load Conveyed by British Road Services.—The heaviest load ever shipped by British Road Services Continental Ferry Service on one road trailer, a 47-ton wheel for a steel rolling mill, arrived at Tilbury Docks on November 21, in the m.v. *Bardic Ferry*, en route from München-Gladbach in the Ruhr, Germany, to Corby, Northants. The vessel is one of the drive-on drive-off ships operated by the Atlantic Steam Navigation Company Transport Ferry Service. The consignment, 13 ft. 5 in. wide, was loaded on a 60-ton pneumatically low-loader trailer owned by B.R.S. (Pickfords) Limited. The trailer, with its load, was hauled to Antwerp by a Continental road haulier and on arrival at Tilbury, was drawn off the vessel and hauled to its destination by a Pickfords tractor.

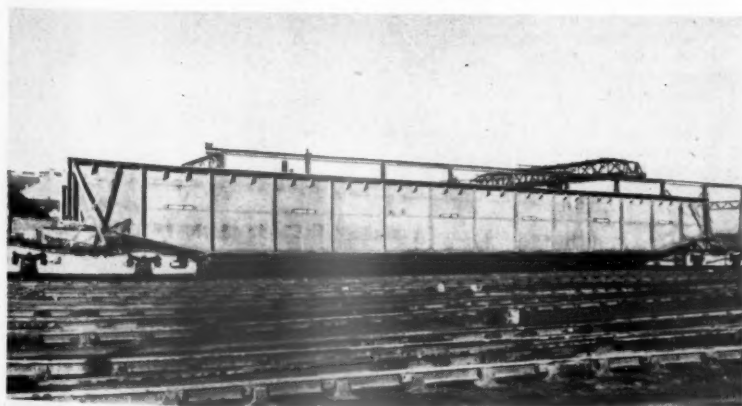
New Accommodation for Thos. Cook.—Last week, Thos. Cook & Son Ltd. held a three-day reception to commemorate the 150th anniversary of the birth of the company's founder, and guests were shown the company's new office accommodation. This consists of two new floors for internal business and a new 40 ft. x 56 ft. area devoted entirely to bookings for businessmen. This section, which is divided into clerical and reception areas, operates independently of other booking offices in the building. It will facilitate quicker and

easier bookings for busy executives who previously had to use the counters catering for normal holiday traffic. Interior wall decoration has been carried out in light mahogany woodwork and the room is furnished with contemporary light fittings. Design was by the Premises & Equipment Department of the company.

Winter Transport Central Joint Conference.—Mr. J. W. Watkins, Member of the British Transport Commission, presided at a meeting of the Winter Transport Central Joint Conference on December 2. No difficulty in meeting the transport requirements of trade and commerce during the coming winter is expected by the Commission. The conference includes representatives of the B.T.C., the Federation of British Industries, the Association of British Chambers of Commerce, the National Union of Manufacturers, and the National Farmers' Union. Mr. Watkins stated that the B.T.C. was well able to deal with any traffic likely to be offered this winter and could take more. The conference also agreed that the long-term future of the railways should be assured by the implementation of the railway modernisation plan and the improvement of services.

Higher Charges on Former G.N.R. Lines in Ulster.—Rates and fares on the former Great Northern Railway in Northern Ireland were brought into line with those charged by the Ulster Transport Authority on December 1. A statement issued by the U.T.A. says that among other things this action is being taken so as to relate charges more nearly to the cost of providing services. The ordinary single and return passenger fares of the G.N.R. were calculated on a basis different from those of the Authority. Some fares are being increased, some reduced, and some remain unaltered. On September 8 last an increase of about 5 per cent took effect in the U.T.A. general level of rail and road rates for merchandise and livestock. The corresponding increase was not applied at that time to the charges of the G.N.R. Board but was introduced on the former G.N.R. services in Northern Ireland on December 1.

Fifth Meeting of Computer Working Party, U.I.C.—Delegates from British Railways and seven foreign railway administrations attended the fifth meeting of the Computer Working Party of the International Union of Railways, held in London on November 25, at the Charing Cross Hotel. Their discussions included the preparation of a bibliography of technical papers, the distribution of technical reports, the preparation of a five-language lexicon of technical terms and the standardisation of conventional signs to be used in the inter-administration exchange of computer flow diagrams. The working party session was followed by a two-day information meeting, attended by some 40 delegates from 15 countries, at which papers were read by the representatives of the French, Swedish, and Italian Railways. Overseas delegates also attended a demonstration of a small computer used for the preparation of pay-rolls by the Western Region of British Railways at Paddington. The Computer Working Party was set up to promote the interchange of information on the use of computers in railway administration, and to facilitate their use for international working. Its President is M. de Fontgalland of the French National Railways. Mr. J. Ratter, Member of the British Transport Commission, presided at a dinner given to the delegates at the Charing Cross Hotel on November 27.



One of two large girders moved by rail in the North Eastern Region of British Railways

Forthcoming Meetings

- December 6 (Sat.).—Stephenson Locomotive Society, North Western Area, the Conference Room, Liverpool Central Station, at 7.30 p.m. Colour slide show "More rail travel in colour," by Mr. J. B. McCann.
- December 8 (Mon.).—Institute of Transport, at the Jarvis Hall (R.I.B.A.), 66, Portland Place, London, W.1, at 5.45 p.m. Henry Spurrier Memorial Lecture "The history of wage negotiations in the municipal transport industry," by Mr. E. R. L. Fitzpayne.
- December 9 (Tue.).—Institution of Railway Signal Engineers, York Section, at the Signalling School, Toft Green, York, at 5.30 p.m. Two short papers and discussion on "Mechanical and electrical signalling installation."
- December 10 (Wed.).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, London, S.W.1, at 5.30 p.m. Paper on "Maintenance and overhaul of electric locomotives and multiple-unit sets of the Manchester-Sheffield-Wath electrification," by Mr. J. S. Scott and Mr. J. K. Lord.
- December 10 (Wed.).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas's Street, London, S.E.1, at 5.45 for 6 p.m. Paper on "American railroads," illustrated, by Mr. E. MacDonald Leo.
- December 11 (Thu.).—British Railways, London Midland Region, Lecture & Debating Society, in the Clerical Staff Dining Club, Cardington Street, Euston, N.W.1, at 5.45 p.m. Paper on "The railways from the customer's point of view," by Mr. E. G. Whitaker, Transport Adviser to Unilever Limited.
- December 11 (Thu.).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Railway Quiz—Questions on railway operation and administration. Question master, Mr. H. G. Bowles, Assistant General Manager, Administration.
- December 11 (Thu.).—Institution of Locomotive Engineers, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 5.30 p.m. Joint meeting with the Institution of Electrical and Mechanical Engineers. Paper on "The Deltic locomotive," by Mr. C. M. Cock.
- December 11 (Thu.).—Institution of Railway Signal Engineers, Bristol Section, at Newport, at 6 p.m. Repeat of Chairman's address.
- December 11 (Thu.).—Railway Correspondence & Travel Society, Bristol & District Branch, at the Grosvenor Hotel, Bristol, 1, at 7.15 p.m. Paper on "Narrow gauge railways in North Wales and the Isle of Man," by Mr. E. J. Deane.
- December 12 (Fri.).—Institute of Traffic Administration, Kent & South Eastern Centre, at the Royal Star Hotel, Maidstone, at 7.30 p.m. Paper on "Air and rail transport in Europe," by Lt-Colonel A. C. Ping.
- December 12 (Fri.).—The Stephenson Locomotive Society, North Eastern Area, at the Demonstration Theatre, Northern Gas Board Showroom, 30, Grainger Street, Newcastle-upon-

- Tyne, 1, at 7 p.m. Talk on "Early days of the L.M. & S.R. in Scotland," by Mr. David L. Smith.
- December 12 (Fri.).—Electric Railway Society, at the College of Technology, Suffolk Street, Birmingham, at 7.15 p.m. Paper on "Australian electric railways," by Mr. Noel F. Reed.
- December 12 (Fri.).—Railway Correspondence & Travel Society, London Branch, at the Railway Clearing House, Eversholt Street, London, N.W.1, at 7.15 p.m. Paper on "Improving railway timetables," by Mr. J. H. Price.
- December 13 (Sat.).—Stephenson Locomotive Society, North Western Area, at the Geographical Society, St. Mary's Parsonage, Deansgate, Manchester, at 6.15 p.m. Paper on "Some reminiscences of the L.M. & S.R. in Scotland," by Mr. David L. Smith.
- December 15 (Mon.).—Permanent Way Institution, London Section, at the Headquarters of the British Transport Commission, 222, Marylebone Road, London, N.W.1, at 6.30 p.m. Paper on "Track recording coaches," by Mr. G. D. S. Alley.
- December 15 (Mon.).—Institute of Transport, at 80, Portland Place, London, W.1, at 5.45 p.m. Annual general meeting.
- December 16 (Tue.).—Stephenson Locomotive Society, London and Southern Area, at Caxton Hall, Westminster, S.W.1, at 6.45 p.m. Cine film show "Railway cine film shots throughout the British Isles, 1957," by Mr. W. A. Camwell.
- December 16 (Tue.).—Railway Correspondence & Travel Society, West Midlands Branch, at 64, Holyhead Road, Coventry, at 7.30 p.m. Paper on "The railways of Scandinavia," illustrated, by Mr. J. Harrison.
- December 17 (Wed.).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6.15 p.m. Paper on "Computers and railways," by Mr. G. H. Hinds, Electronics Advisory Officer, British Transport Commission.
- December 18 (Thu.).—Institution of Locomotive Engineers, at the Dorchester Hotel, Park Lane, London, W.1. Dinner and dance.
- December 18 (Thu.).—Institution of Railway Signal Engineers, London Section, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 6 p.m. Paper on "Geographical circuit technique," by Mr. H. A. Codd.
- December 19 (Fri.).—Railway Correspondence & Travel Society, Lancs & North West Branch, at the D.O.S. Conference Room, Preston Station, at 7 p.m. Paper, illustrated by colour slides, on "Impressions of Swiss Railways," by Mr. Cyril Smith.
- December 20 (Sat.).—Railway Correspondence & Travel Society, South of England Branch, at the Junction Hotel, Eastleigh, Hants, at 6 p.m. Paper on "The London & Southampton Railway," by Mr. K. G. Carr.
- December 22 (Mon.).—Railway Correspondence & Travel Society, Northampton Branch, at the Liberal Club, Castilian Street, Northampton, at 7.30 p.m. Paper on "More railway travel in colour," illustrated, by Mr. J. B. C. McCann.

Railway Stock Market

Stock markets resumed an upward trend, but the emphasis remained on industrial shares, though there was a moderate rally in British Funds because of talk of prospects of a further reduction in the bank rate next year. The recent sharp reaction on Wall Street, although short-lived, remains a talking point in the City, because it showed how closely our markets can move with that centre. The recent fall was regarded as largely technical, though on the other hand, it was due in part to the fact that sentiment has been affected in the U.S.A. by disappointment that the upturn in business activity is not making greater progress. Without a much bigger trade expansion in the U.S.A. next year, prospects of a good increase in world trade will not be very promising.

Movements in foreign rails were small with main attention again centred on Antofagasta because of the annual report and Mr. Harold Drayton's cautious remarks about the outlook in his chairman's statement. The ordinary stock receded further on balance from 15 a week ago to 14, but then improved slightly to 14½, while the preference stock at 29½ compared with 31 a week ago. Costa Rica ordinary stock was 14½ and business at 89 was recorded in the 6½ per cent second debentures. Chilean Northern first debentures were 49½, Brazil Railway bonds 6½ and Paraguay Central prior debentures again quoted at 11. International of Central America common shares and preferred stock were \$22½ and \$110 respectively.

West of India Portuguese capital stock kept at 77 and the 5 per cent debentures at 68. Business around 12s. 9d. was shown in Nyasaland Railways shares and the 3½ per cent debentures were 62½.

Canadian Pacific rallied with Wall Street, and were \$54½, compared with \$53½ a week ago. hTe 4 per cent preference stock eased to 56½ and the 4 per cent debentures to 63½ xd. White Pass shares firmed up to \$15.

Elsewhere, Mexican Central "A" bearer debentures rose fractionally to 74, San Paulo Railway 3s. units remained at 2s. and United of Havana second income stock at 6½. Among shares of locomotive builders and engineers, G. D. Peters held steady at 25s. 7½d. There was again a good deal of activity in Westinghouse Brake shares, which, however, did not keep best prices and at 42s. compared with 43s. 3d. a week ago. Beyer Peacock 5s. shares have remained at 8s. 4½d., while Charles Roberts eased from 10s. 6d. to 10s. 3d. and Birmingham Wagon remained at the lower level of 20s. 6d. recorded a week ago, North British Locomotive were 15s. 6d.

Among other shares, Blaw Knox have been more active around 25s. 6d. and Worthington-Simpson were good at 43s. 3d. After an earlier decline, Crompton Parkinson 5s. shares rallied to 12s. 3d., but following the half-yearly progress report, Metal Industries eased to 41s. 3d. Ruston & Hornsby at 22s. 9d. lost a few pence compared with a week ago, but British Timken at 60s. 3d. have been quite well maintained. English Electric showed firmness at 58s. 9d. Associated Electrical gained a few pence at 57s. 9d. while Renold Chain at 40s. 9d. more than held their recent rise. Dowty Group 10s. shares were 41s. 4½d. and Pressed Steel 5s. shares 21s. 6d. T. W. Ward have been firmer at 82s. 3d. and Ransomes & Marles 5s. shares changed hands around 16s. 6d. F. Perkins 10s. shares were 10s. 10½d. and Head Wrightson 5s. shares 24s.

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